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Household Financial Behavior: Implications For Consumer Spending

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HOUSEHOLD FINANCIAL BEHAVIOR: IMPLICATIONS FOR CONSUMER SPENDING

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Abstract

Consumer credit expanded rapidly during 1977-78, generating widespread concern that householdswere building a debt repayment obligation heavy enough to trigger a recessionary decline in consumption expenditure. Prospects of sharp increases in loan delinquencies and losses on the enlarged consumer debt carried worrisome implications both for consumer spending and finance industry profitability.

This working paper is divided into two sections: the first investigates, from the evidence of aggregate economic data, the extent to which households may have become overextended between 1977 and 1979; the second section uses household survey data to examine borrowing behavior from a microeconomic perspective, and particularly to explore how the major expenditures of individual households are affected by large preexisting debt obligations.

Based upon U.S. aggregate data on installment credit growth rates, debt payment obligations relative to income, and trends in household net worth, "nondiscretionary" spending, and loan delinquency rates, it is suggested that the financial condition of households had not deviated greatly from earlier experience during periods of economic expansion.

The household survey data (from surveys conducted in 1970, 1977 and 1978) provide a variety of insights into household financial developments. It was found, for instance, that between 1970 and 1977 the proportion of households in debt had increased most sharply for the lowest and highest income

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segments of those surveyed; that the lowest-income debtors experienced the largest increase in annual debt repayments relative to income, but that the highest-income group accounted for the largest share by far of the increase in outstanding debt. It was also concluded that population shifts between 1970 and 1977 have had almost no perceptible influence on the proportion of all households having some installment debt or in the average amount of debt outstanding per household. Finally, analysis of spending on major durable goods revealed little evidence that initial levels of debt payments relative to income retard such spending.

HOUSEHOLD BORROWING BEHAVIOR: IMPLICATIONS FOR CONSUMER SPENDING

While consumer credit was growing rapidly from early 1977 well into 1979, much attention was focused upon the debt burden of households and its implications for the future course of consumer spending. Aggregate debt burden measures--such as debt outstanding or the volume of repayments relative to disposable personal income--were rising steadily. Concern arose that excessive debt expansion could lead to a marked weakening of consumption, as the burden of heavy debt repayments exerted a larger and larger claim upon current income.

Some of the evidence on borrowing behavior available from economic aggregates is examined in Part I, but proper interpretation of these broad measures may depend crucially upon the behavior of various factors, not readily measurable, which underly their movement. Part II of this paper provides a microeconomic perspective on some of the issues surrounding aggregate credit developments, through exploration of household survey data on debt use. These microeconomic data were collected by the University of Michigan's Survey Research Center in its 1970 Survey of Consumer Finances and in two more recent surveys: an August 1977 canvass of 2500 households and an August 1978 reinterview of about half of the original 1977 panel.[1]

I. AGGREGATE ECONOMIC INDICATORS

A. Growth in Credit

Part of the concern that arose regarding the rapid growth of consumer credit may reflect some degree of "money illusion"--an easy trap to fall into in the present inflationary environment. Consumer credit expanded by $35 billion in 1977 and by $45 billion in 1978, an amount double the amount of expansion in any year before 1977 (see Exhibit 1). Nevertheless,

when this large volume of credit is converted to an annualized percentage rate of growth, it becomes apparent that the rate of expansion in 1977-78 was not greatly out of line with previous periods of growth. If installment debt outstanding is deflated by a general price index and the growth rate recomputed, the 1977-78 credit expansion appears almost indistinguishable from previous expansions (Exhibit 2).

B. Debt Relative to Income

To measure the degree of household debt burden, observers have frequently focused upon ratios of aggregate debt relative to disposable income--either debt repayment, debt outstanding or occasionally the net expansion in consumer debt. The last measure, however, is a better guide to current borrowing activity than to cumulative debt burden.[2] More often cited as an index of debt burden is the ratio of debt repayments to disposable income. This ratio is presented in Exhibits 3 (table) and 4 (chart), for consumer installment credit only and for consumer plus mortgage debt. These ratios have reached new high ground, but the small margin seems a rather slim basis on which to conclude that consumers have seriously overborrowed. Such a conclusion would be particularly tenuous in light of various difficulties in interpreting aggregate data, some of which are outlined below.

1. The aggregate data provide no indication of the underlying distribution of debt. If debt rises relative to income, is it because a greater proportion of people are borrowing? Or, might a constant or declining proportion be borrowing more heavily? Who is responsible for most of the increase--poor people with limited ability to service debt, or relatively well-off people who simply find it advantageous to borrow? Some of these questions are explored in Part II.

2. The content of the data on installment debt has changed over time. In particular, the inclusion of the fast growing revolving credit segment has complicated interpretation of installment debt repayments. Many individuals use credit cards simply as a convenient substitute for cash or check transactions, rather than as a means to "borrow." In the 1977 Survey, about half the cardholding respondents claimed to almost always pay revolving accounts in full within one billing period. Yet, with no means to exclude such convenience credit, the Federal Reserve includes it in its published consumer credit statistics, thereby imparting an upward bias to measures of installment debt burden.

3. Shifts in maturity structure affect the levels of debt repayments and outstandings. In the short-run, a lengthening of maturities in the late 1970's tended to hold down repayments and raise the level of outstandings. For the long-run, a stretchout of the repayment schedule tends to make the repayments series more stable, and less capable of dropping to "safer" levels during periods of economic slowdown.[3]

C. Household Balance Sheet

Beyond the various aggregation and measurement problems, it may be argued that the debt-to-income ratios represent a seriously incomplete picture of household capacity to handle debt and to maintain a high level of expenditure. Balance sheet considerations may provide a more fundamental perspective from which to view the impact of debt on household behavior. It is certainly true that income constitutes only one source of funds for servicing debt or for supporting outlays on goods and services in the face of high debt payments. Assets should also be taken into account. Exhibit 5 graphs movements for the last several years in financial assets and liabilities of the household

sector taken from the Federal Reserve's Flow-of-Funds accounts. Financial net worth is shown in the lower panel. Clearly, current dollar asset growth has kept pace with the rapid growth in household debt during recent years, and financial net worth has climbed fairly sharply.

One criticism of Exhibit 5 is that the current-dollar denominations distort the true financial status of households--constant dollar financial net worth would likely bear more directly upon consumer behavior. It would also seem appropriate to adjust for population growth in tracking wealth changes over time. Reflecting these considerations, the top panel of Exhibit 6 shows financial net worth per capita in constant dollars. In this light, the household sector's balance sheet position by 1979 appeared less sanguine than in the context of current dollar net worth, at least on the surface. In real terms, per capita financial net worth in mid-1979 was considerably below levels reached in 1968 and 1972. Although real net worth was above the lows during the 1974-75 recession, the gain had been quite modest for a period of economic expansion, and even a slight decline was observable during the most recently plotted 8 to 10 quarters.

While one might interpret the sluggishness of real financial net worth as a condition of impaired liquidity that was reducing the capacity to spend, this development might better reflect a conscious and rational shift of households from financial towards tangible assets during a time of rapid inflation. In part because of regulatory restraints, yields on interest-bearing assets most commonly owned by households may not have fully reflected expected inflation rates, and the differing tax treatment of interest income and capital gains creates additional incentives to invest in tangible assets in an inflationary environment. When tangible assets are included in a calculation

of household net worth, as in the bottom panel of Exhibit 6, the sector's balance sheet appears much stronger. The principal ingredient in the growth of tangible assets, of course, has been the sharply inflated values of homes in recent years. But it is reasonable to believe that many households take into consideration their home equity in planning expenditures, and in fact, liquefication of this equity has been an important source of funds to the household sector.[4]

One is thus left with several measures of household asset positions, each appearing to tell a somewhat different story. Which is the most relevant may depend upon the nuance of the question asked. On the one hand, if one were concerned with the independent effect of the balance sheet position on consumer spending, there may have been little reason to fear a retrenchment due to over-indebtedness. Net worth including tangible assets had been well maintained in real terms in the 1977-79 period. Household liquidity may have fallen, but to the extent that diminished liquidity represented a preferred position in an inflationary environment, little slowdown of spending need have been implied. On the other hand, the less liquid character of household finances might have implied greater vulnerability to any economic slowdown inititated through other causes. That is to say, while it may not have seemed likely that consumers would lead the way into recession because of their debt load, they might be thought more vulnerable than usual to any recession that might develop.

Generally speaking, few empirical studies of the impact of debt burden on consumer spending have been done.[5] One problem, perhaps, is that, despite the analytical superiority many economists find in the portfolio adjustment approach to the question, aggregate balance sheet data are afflicted with

many of the same problems as the debt-to-income measures discussed above, such as suppression of all information on the distribution of assets and debts among households.

D. Discretionary Spending

There are several other aggregate indicators of personal finances which can be used to evaluate the probable course of consumer spending. Among these are measures of nondiscretionary spending relative to income, and nondiscretionary spending plus debt repayments relative to income, presented in Exhibit 7. From a lengthy historical perspective, it is clear that consumers have gradually improved their living standards by being able to to spend less on "essentials," leaving more for discretionary spending or saving, as the top panel shows. In the more recent period, however, there has been little further net improvement in the consumer's discretionary income situation. Inclusion of debt repayments as a nondiscretionary outlay has pushed the ratio upward since 1975; nevertheless, debt payments do not seem to have made the sort of inroads into discretionary uses of income that would be expected of a population that was too heavily burdened by debt.

E. Delinquency Experience

Another relevant type of aggregate data includes direct measures of payment difficulties, such as mortgage and consumer loan delinquency rates, some of which are shown in Exhibit 8. On balance, these figures provide little indication of a worsening debt burden problem during the 1977-78 period of rapid debt growth. Mortgage delinquencies at savings and loan associations, in fact, were apparently at a 5-year low as recently as the fourth quarter of 1979. Only the series on bank-card delinquencies rose significantly within the 1977-78 period. Consumer loan delinquencies increased during the second half of 1979, but remained measurably below earlier highs.

II. HOUSEHOLD SURVEY DATA

This section presents some findings of research on debt burden using financial data for individual households collected in the three surveys: University of Michigan's 1970 Survey of Consumer Finances, the Federal Reserve sponsored 1977 Consumer Credit Survey, and a reinterview of part of the 1977 panel.

A. Major Questions

Several questions regarding household debt use, which are principally or exclusively answerable with microdata, are dealt with here. In broad terms, the focus of these questions is whether the strong expansion of consumer credit in 1977-79, and the associated rise of the aggregate debt-to-income ratios to new highs, warranted serious concern or could be viewed with equanimity. Specifically:

1. Do the aggregate borrowing figures mask important shifts in the distribution of debt among households? For instance, did debt become more--or less--concentrated in recent years? Was a greater or lesser proportion of debt owed by lower-income families than before?

2. Were there changes in the makeup of the population that provided a "benign" explanation for the increasing aggregate debt ratios? For instance, might a greater proportion of households in the family formation stage of the life cycle have accounted for higher overall debt use, without implying abuse of credit?

3. Given the concern that higher aggregate debt burden might have lead to a curtailment of consumer spending, is there any evidence from the microdata that high debt relative to income tends to discourage consumption?

B. Distribution of Debt

In both 1970 and 1977, the proportion of households in debt was a generally increasing function of gross family income, while the ratios of debt outstanding or repaid per year relative to income were inversely related to income levels.

For consumer installment debt, the overall proportion of surveyed households in debt rose slightly between 1970 and 1977. The greatest increases occurred within the highest and lowest income quintiles. The largest gains in the average ratios of debt to income occurred in the low-income category. Nevertheless, as Exhibit 11 shows, the lowest income group experienced only a slight rise in its still small share of outstanding installment debt (4.4 percent in 1977 from 3.8 percent in 1970). The highest income quintile accounted for a sharply higher share of outstanding installment debt in 1977 (37 percent vs. 25 percent in the 1970 survey). Each middle-income group accounted for smaller shares in 1977 than in 1970.

Findings for mortgage debt roughly parallel those for installment debt. However, the overall proportion of households in debt advanced more strongly for mortgage than for installment debt, and the increases were spread more evenly among income groups.

1. Installment Debt Use by Income Class. Exhibit 9 presents data on the proportion of families with consumer installment debt (excluding credit card debt) for each of five income groups, as well as average debt-to-income ratios for the debtor subgroup within each income class. To facilitate comparison between 1970 and 1977, respondents for each year were grouped into approximate income quintiles. In this way, the top one-fifth of the income distribution for the two years could be compared, regardless of what specific dollar boundaries would be dictated for the income classes.[6]

a. Proportion in Debt. The proportion of low-income families with installment debt rose considerably between the two surveys--from 23 percent to almost 31 percent--although the in-debt proportion was still considerably below that for any other income class. The proportions in debt increased only moderately (or fell slightly) from the 1970 figure in the next three higher income groups, then rose sharply--from 47 to 58 percent--for the highest income quintile. In the 1977 survey, the proportion was greatest (66 percent) in the next-to-highest income group, but the disparity from other income groups had narrowed considerably from the 1970 distribution.

Reasons for the larger gains in debt use among the highest and lowest income households are subject to debate. For high-income groups, supply constraint is presumably a negligible factor in determining debt use. Such demand-related factors as inflation, which encourages advance buying of durable goods and permits repayment in "cheaper dollars," could stimulate higher income families to use credit more intensively. The relative stability of consumer finance rates in the face of rapid inflation reduces the real cost of credit, which encourages borrowing. More favorable tax treatment of interest costs as inflation promotes families into higher nominal income brackets adds to the inducement to borrow.

For the lower income groups, some relaxation of supply constraint may have taken place between 1970 and 1977, as lenders have competed more vigorously for consumer business. Some of the difference (for both income groups) might also be attributed to the fact that the 1970 Survey occurred during a recession while the 1977 Survey came in the midst of a strong economic expansion. Possible changes in demographic characteristics within income groups may also have affected the proportions of respondents in debt. Some

of these factors are examined for the low-income group in a later section of this paper.

b. Debt/Income Ratios. Among families with some installment debt, low income debtors have experienced the greatest increase from 1970 in debt outstanding or repaid relative to their gross family income.[7] In 1977, outstanding installment debt for the lowest income quintile equalled 30 percent of gross family income on average, up from 22 percent in 1970. Other income groups experienced smaller increases from 1970, a result perhaps partly explained by their more ready access to bank and other credit card accounts, as illustrated in Exhibit 10. Credit card debt, as mentioned, is not included in the debt totals underlying the measures in Exhibit 9.

The ratio of scheduled repayments to family income rose significantly for the lowest income group between 1970 and 1977, but was little changed for other income groups, and even declined for the highest income class. The generally smaller increases in the repayments ratio compared with the outstandings ratio, particularly for the higher income groups, no doubt reflect the lengthening of maturities on consumer loans in recent years. Longer maturities may be most widely available for persons in higher income brackets likely to be considered good credit risks.

Exhibit 11 shows the proportion of total installment debt covered in the survey attributable to each income group. The columns on the far right adjust for the slightly unequal distribution of respondents into the five approximated quintiles. The low-income group accounted for a relatively small share of total debt, despite the higher average outstanding-debt-to-income ratio for low-income families with debt observed in Exhibit 9. The small share of total debt attributable to low-income families reflected their

comparatively lower level of consumption expenditure and lower average propensity to be in debt at all. Compared with 1970, the highest-income group experienced the greatest expansion in share of total installment debt, rising 12 percentage points to a 37 percent share. The share for low-income families also increased, but remained at less than 5 percent of the total.

2. Mortgage Debt Use by Income Class. Exhibit 12 presents data for home mortgage debt analagous to the consumer installment debt figures of Exhibit 9. As is generally true with installment debt, the proportion of families with mortgage debt was higher for higher income classes, while the ratios of debt to income were lower the higher the income class. All income groups showed an increase in the proportion with mortgage debt between 1970 and 1977, but unlike the installment debt situation, the increase for the lower income group was not out of line with increases in other groups. However, the low income group did show substantial gains in the average ratios of outstanding mortgage debt and mortgage payments relative to family income. Increases in debt relative to income were much smaller (and sometimes negative) for each of the other income classes. On average, in the 1977 survey, low income families had total mortgage obligations of about 3-1/2 times the size of their annual incomes, while scheduled monthly payments of interest and principal took 49 percent of their income each month, up from 31 percent in 1970.

It appears from Exhibits 9 and 12 that the proportion of mortgage debtors in the population has grown faster than the proportion of installment debtors between 1970 and 1977, whether all survey respondents are considered or just those for whom income was known. For the full sample, the proportion of mortgage debtors rose from 36 to 40 percent, while the proportion of

installment borrowers was virtually unchanged, rising only from 49 to 50 percent. For the subsample with known incomes, the increase in mortgage borrowers was from 36 to 42 percent, and for installment borrowers, 49 to 53 percent.

3. Total Mortgage Plus Installment Debt by Income Class. Exhibit 13 presents statistics of debt use for mortgage and installment debt combined. This table necessarily portrays patterns similar to those in Exhibits 9 and 12. Approximately two-thirds of all families in the 1977 Survey had at least one of the two broad types of debt under consideration, a moderately higher percentage than in 1970. It might be noted that the average debt-to-income ratios for the low-income group were smaller for total debt than for mortgage debt alone. This, of course, reflects inclusion in the total debt figure of many families which had installment debt but no mortgage.

C. Demographic Influences on Household Borrowing.

Analysts have pointed to several demographic developments as likely contributors to the strength of consumer credit growth. Some of these influences would generally be regarded as benign, and serve to lessen concern over the possible extent of "overborrowing." For instance, a shift in population mix toward a greater proportion of persons in the "family formation" years might imply a normal and defensible increase in aggregate debt relative to aggregate income. However, as discussed below, such a change in population characteristics seems to have had little appreciable effect on aggregate debt use.

1. Population Shifts. The impact of changing age structure of the population on household indebtedness is examined in Exhibit 14, using Census Bureau population statistics for 1970 and 1977, and data on household borrowing by age group from the 1977 Survey. According to the table, the

changes in age structure have probably had little net effect on the proportion of households in debt or on the mean amount of debt outstanding. In 1977, there was a greater proportion of families than in 1970 headed by a person aged 25 to 34 years old, which was also the age group with the highest propensity to be in debt (67.5 percent of such families). Families headed by persons under 25 also increased between 1970 and 1977, according to Census Bureau statistics. However, increases in these two age groups were partially offset by declines in the proportion of families headed by persons aged 35 to 54, and these families were also relatively heavy debt users. Moreover, they borrowed larger average amounts than the youngest family group, as indicated in column 5, which shows the mean debt outstanding for all families (including non-debtors) in each age category. On balance, the age shifts have simply not been striking enough, nor the differences in debt propensities large enough among the crucial age groups, to have much impact on aggregate debt measures.

The last 4 columns of Exhibit 14 show the derivation of comparative in-debt proportions and average debt amount for all families, when such measures are held constant for each age group (at 1977 values) and weighted alternatively by the 1970 and 1977 population distributions. For the proportion in debt, the direction of impact is positive, but quite small, as shown on the "all age group" line under columns 6 and 7. Given 1977 propensities to be in debt, the 1970 overall in-debt proportion would have been 49.5 percent and the 1977 proportion 49.7 percent. When amounts of debt are considered in columns 8 and 9, the age shift implies a slight drop in aggregate indebtedness, from $1258 to $1246 per family, reflecting the generally smaller size of debt balances for the youngest families compared to the middle-aged groups.

2. Debt Use Within the Low-Income Group. Since the in-debt proportion and debt-to-income ratios had risen sharply for low-income households between 1970 and 1977, this group was singled out for more intensive study of demographic influences on debt use. Objectives were to determine whether debt increases might be concentrated in specific subgroups of low-income families, and whether changes in demographic characteristic of the low-income group might be associated with increasing debt use. Preliminary results suggest that differing composition by sex or marital status of family head have had little effect on borrowing patterns for the group. Education level also appears to have had little bearing on low-income family borrowing, while number of dependents appears to have contributed marginally to overall higher debt use. Households with minor dependents were somewhat more likely to be in debt than other households, and the proportion of low-income households with minor dependents was higher in 1977 than in 1970. Also, while low-income households were more apt to be in debt in 1977, regardless of whether they had minor dependents or not, the debt-to-income ratios increased markedly only for those with dependents.

One noteworthy difference between 1970 and 1977 was a sharp increase in the number of low-income households surveyed having substantial assets. An important source of the larger asset holdings was home values. Financial asset distributions were not greatly different between the two years, although there was a significantly higher proportion of low-income households with non-zero financial assets in 1977. Exhibits 15 and 16 present in-debt proportions and installment credit repayment-to-income ratios for the low-income quintile according to asset holdings for both 1970 and 1977. The proportion of low-income households belonging to each asset group is also shown in

Exhibit 15. As can be seen, the proportion of the low-income households in the three highest asset categories increased sharply between Survey periods and the proportion with no reported assets declined markedly. In both years, the proportion in debt generally was smaller in the higher asset categories, but the pattern was less pronounced in 1977. As a result, households in the higher asset categories were much more likely to be in debt in 1977 than in 1970. Repayment-to-income ratios were higher in 1977 for all but one asset category of the low-income quintile, but differences appeared to be greatest in the high-asset categories.[9]

On balance, it appears that greater asset holdings in 1977 were significantly associated with the higher borrowing propensities observed for lower income households in that year. There were more low-income families who owned substantial assets and such families were additionally more inclined to be in debt and for larger amounts relative to income, than their 1970 counterparts.

D. Purchase Activity Between Surveys.

A question of broad current interest concerns the extent to which consumer expenditure decisions may be affected by large debt obligations. Should a large buildup of debt be expected to induce a marked slowdown in consumer spending? In Part I, the macroeconomic evidence was seen to be not fully conclusive. This section seeks to provide some microeconomic insights by examining the incidence of major consumption expenditures made by reinterviewed respondents during the approximate one-year period between surveys in 1977 and 1978. A major objective was to determine the extent to which the debt burden of households at the beginning of a period affected subsequent

purchases of major consumer durables (here including expenditures on home improvement services).

To measure the influence of debt burden on major expenditures of individuals, a function was estimated in which the occurrence of one or more major expenditures (during the period between surveys) was dependent upon such "life cycle" characteristics as age of household head and number of dependents, along with income, asset holdings, and attitudinal variables, such as perception of price increases, that might influence buying decisions. The role of "debt burden" was represented by a ratio relating a household's beginning-of-period scheduled installment debt repayments to its gross (pre-tax) family income. If the hypothesis is correct that, other things equal, higher levels of debt discourage expenditures by imposing a sizable alternative claim on income, then the debt burden measure should be negatively associated with incidents of major purchases, once the influence of other determinants have been properly accounted for.

The primary analysis was carried out using multiple classification analysis (MCA), an adaptation of ordinary least squares regression for use with dummy variables, which was developed in the early 1960s at the University of Michigan. Unlike many simpler multivariate methods, which require linear or other restricted relationships among variables, MCA can handle relationships of various forms among predictors or between a predictor and the dependent variable, and can accept predictors with nominal measurement (such as race or marital status) as well as numerical data. Subcategories of predictor variables are transformed into dichotomous "0-1" dummy variables and related to a dependent variable which may also be dichotomous or measured on an interval scale. Coefficients of predictors in MCA are expressed as adjustments

to the overall mean of the dependent variable, not deviations from the single class which must be excluded from each set when dummy variables are used.

The principal output of an MCA program includes the overall full-sample mean of the dependent variable (between 0 and 1 where a dichotomous dependent variable is used), along with the subsidiary means of the dependent variable calculated for each subcategory of the predictors. Also printed is an R^2 statistic, analogous to the R^2 of ordinary least squares regression, a measure of the joint explanatory power of the predictors. A statistic labeled β specifies the relative importance of each predictor's contribution to movement in the dependent variable with all other predictors held constant. It measures the number of standard deviation units the dependent variable moves when the explanatory variable changes by one standard deviation.[9]

In the present study, 1978 reinterview data on major expenditures made between surveys was formed into a variable indicating "no purchase" or "some purchases" (one or more).[10] This variable was given the values "0" or "1" and correlated with selected economic, demographic and attitudinal variables, as indicated above. A beginning-of-period ratio of scheduled installment debt repayments divided by family income was calculated from data in the original 1977 survey, and was used as one of the several predictors.

Exhibit 17 presents the "mean purchase frequency"--the proportion of respondents who made one or more major purchase--for each subcategory of each predictor, both unadjusted and adjusted for the effects of the other predictors. The "grand mean" on the top line of Exhibit 17 indicates that approximately 50 per cent of the reinterviewed households had made one major purchase or more since the original interview a year earlier.

1. Impact of Repayments Burden. The ratio of debt-repayments-to family-income predictor was subcategorized into those households which had debt repayment ratios of 10 percent or less, 11 to 20 percent, greater than 20 percent, or which had no debt at all. The results from the MCA analysis indicate that the category of respondents having the highest initial ratios of instalment debt repayments to family income also exhibited a somewhat greater tendency to make a major purchase in subsequent months than those with no initial debt or a low repayment ratio. This pattern was moderated when adjustment was made for intercorrelation among the predictor variables, but the positive relationship between the repayments ratio and a subsequent major expenditure remained.

The results for the debt burden variable are shown in the first bank of data in Exhibit 17. The calculations show that, before adjusting for the simultaneous impact of other predictors, roughly 41 percent of the nondebtors made a major purchase, compared with nearly 60 percent for those with the heaviest repayment load relative to income.

The moderating influence of the other predictors is reflected in the "adjusted" purchase frequency column. For instance, for nondebtors, the frequency of purchase is recalculated to 49 percent when the influence of the other nine predictors is screened out, compared with the unadjusted figure of 41 percent. Adjustment worked in the opposite direction for households most heavily in debt. The proportion of households making a purchase while facing heavy repayments dropped to approximately 55 percent after adjustment, from 60 percent unadjusted. Nevertheless, only for households heavily in debt did the adjusted proportion of respondents making a purchase

appear significantly above the overall average. This result thus runs directly contrary to the hypothesis that, other things equal, a high debt obligation relative to income discourages spending.

The positive correlation between debt position and large purchases, it should be noted, was a relatively weak one, as indicated in Exhibit 18. This exhibit presents for each variable the rank order of the β-statistics, which indicates the relative importance of each predictor in explaining the dependent variable, with all other predictors held constant. For the repayments-to-income ratio, the low value of β (.027) and low rank (9th of 10) indicates that this measure was simply a poor predictor of future expenditures on major items, at least in the economic environment in the period prevailing between surveys. The predictor "age of family head" possessed the greatest ability to explain variation in the dependent variable, after adjusting for the effects of all other predictors. Other important predictors, discussed below, turned out to be the number of minor dependents in the household and the household's income bracket.

2. The Impact of Other Predictors. The demographic variables "age of household head" and "number of minor dependents" exerted a strong influence on major consumer expenditures. The income quintile to which the family belonged was also an important determinant, while household asset holdings (including value of real property) ranked last in explanatory power, slightly below the debt burden measure.

The pattern of estimated values for the dependent variable appears quite reasonable for the categories of age and income. Households headed by younger individuals--typically those in the "family formation" stage of the life cycle--exhibited the highest incidence of major purchase, while households

with older heads were less likely to make a major purchase. By income level, purchase of an auto or major durable occurred least frequently within the low-income group, and increased with each successively higher income class. This pattern was particularly pronounced in the unadjusted relationship; allowance for other predictors substantially moderated the apparent strength of the income-expenditure linkage.

As shown in Exhibit 17, the presence of several minor dependents in the household (3 or more) tended to be associated with a low incidence of "big-ticket" purchases, once the influence of other variables was accounted for. This relationship might reflect higher than average commitment of income to spending on food and clothing in such households; or perhaps families with 3 or more dependents often have already amassed most of the household capital goods that dominate the "major expenditure" category. The highest (adjusted) incidence of major purchase was among 1-dependent households, but purchase propensities for the 0- and 2-dependent categories were not much different.

The "age of auto" variables were included in the MCA analysis to represent the "need" to buy an auto. For instance, a household which already owned a car of recent model-year would presumably feel less compelled to purchase a car during the period covered in the reinterview than would a household with an older car. Since ownership of a relatively new car would probably relate positively to debt repayments, leaving age-of-auto variables out of the list of predictors might have obscured the influence of the debt burden measure. In fact, however, the adjusted mean purchase frequencies for the debt burden categories were little affected by the presence of the car age variables, although the car age variables themselves were modestly related to major purchases.[11]

Variables reflecting consumer perceptions of their personal financial situation (better off/worse off) and their perceptions of the rate of price increases ranked relatively low in explanatory power. On an unadjusted basis, the group that felt better off financially had an above-average rate of major purchase, while the "worse off" group was below average in purchase frequency. Adjustment for the influence of other predictors reversed this pattern, however, suggesting that perception of financial status added little to what could be inferred from the more objective variables. No particularly clear pattern of expenditure frequency emerged for the price perception variable: respondents with extreme views of price changes--whether too low or too high--appeared to belong to households with lower rates of purchase, but this result was fairly irregular.

3. Alternative MCA tests. The finding that the size of scheduled debt repayments relative to income has little effect on subsequent expenditures is still subject to question on at least two general bases. It may be argued that an unresolved simultaneity problem biases the measured relationship between debt burden and instances of major expenditure. It may also be posited that the particular measure of debt repayment burden and/or expenditure was inappropriate--that outstanding debt should have been used, that other forms of household debt should have been included, or that dollar amounts of expenditure rather than instances of spending should have been studied. These broad issues are commented upon below.

a. Simultaneity problem. As discussed earlier, the "life cycle" variables of age, family size, and so forth, were found to be important determinants of major expenditure. Of course, insofar as major expenditures are

frequently financed by consumer installment debt, the life cycle variables are also strongly associated with debt payments. Moreover, since the life cycle characteristics of a household change only gradually over time, households engaging in major purchases in one period have a relatively high likelihood of making a major purchase during the following year. Thus debt at a given point can be expected to correlate with major purchases in the period to follow if only because both initial debt and later expenditures are reacting to essentially the same life cycle variables. As discussed earlier, the MCA test to explain major purchases included several current period life cycle predictors, but this specification may not have been adequate to neutralize the simultaneous relationship of the life cycle variables with the dependent variable and debt burden predictor. It left unaddressed the problem of correlation between the debt variable and the error term.

An alternative, two-stage, estimation procedure was employed to deal with the simultaneity problem. In the first stage, debt formation was explained by an equation that contained income class and various demographic and life cycle variables. This provided a predicted or explained portion of debt and a residual unexplained portion of debt. That portion of debt accounted for by the first-stage equation might be expected to relate positively with subsequent expenditures owing to the simultaneous relationship with life cycle characteristics. The unexplained elements of debt might then be more likely to reveal whatever damping effect high debt in itself might exert on decisions to make major purchases.

The second stage of the process was to reestimate the original equation for purchase activity, with one modification. The predicted and

residual repayments-to-income variables, categorized into approximate quintiles, replaced the observed original value of that ratio. In the new equation, the variable for predicted debt-to-income ratio ranked third in p-value, while the residual (unexplained) aspect of debt burden ranked next to last. The quintile representing the highest predicted debt burden was associated with a considerably higher-than-average rate of purchase, but no uniform pattern pertained among the quintiles. The fourth quintile--those with above average predicted debt-to-income ratios--had a relatively low incidence of major purchase. Neither was any pattern apparent in the coefficients of the residual debt burden quintiles. The fifth quintile (representing households with the largest positive deviation from predicted debt burden) was somewhat above average in purchase activity, but so was the second quintile of households. The other three quintiles were slightly below average in incidence of major purchase. On balance the results offered little evidence that debt burdens higher than explicable by stage of life cycle would deter major expenditures.

The basic equation was reestimated with the predicted and residual debt burden variables appearing separately rather than together. Each performed alone about as it had when both variables were used in the equation.

b. Other forms of variables. Analyses of several variants of the debt-income variable and alternative models are summarized below. These variants were tested only in the single-equation MCA model, not in the two-stage alternative.

In the original model, debt repayments were confined to closed-end installment debt. Revolving credit and mortgage debt were both excluded from the calculation. Data on revolving credit repayments were not available from the 1977 survey, although respondents did provide an estimate of the total inome owed on credit card accounts. In one alternative MCA test the estimated amount

of total credit card debt owed was included as a separate explanatory variable. It ranked relatively high among the predictors of expenditures in the following 12 months. Households with no credit cards exhibited the highest frequency of purchase, and those with credit cards but with no outstanding card debt were slightly above average in purchases. For households with some card debt outstanding, those with large balances averaged a greater tendency to purchase than those with smaller balances. The estimated purchase frequencies calculated for subcategories of the installment debt repayments-to-income variable were largely unaffected by the presence of the card debt variable.

A separate test was also made in which mortgage debt repayments were added to installment debt repayments to form a new repayments-to-income ratio. This formulation tended to accentuate the positve relationship between debt obligations and major purchase activity, but only marginally, and the variable again ranked quite low in β-value.

Outstanding installment debt relative to income was substituted for the repayments ratio in another version. The previously observed greater likelihood of the heavily indebted households to make major purchases (compared to nondebtors) was even more pronounced when outstanding debt was considered. The β-rank of the debt-to-income predictor improved somewhat when outstandings were substituted for repayments in constructing the variable.

For most respondents, dollar amounts of purchase were ascertained in the reinterview survey. It was possible, therefore, to substitute amount of expenditures for the "purchase-no purchase" dependent variable. In this case, mean values of the dependent variable for each subcategory of predictor represented the average amount spent on major purchases by households within the subcategory. The overall explantory power of this alternative equation was relatively low,

and the debt-repayments-to-income ratio remained a low ranking predictor. The pattern of relationship was somewhat different, however, in that dollar amounts of purchase for households with no initial installment debt were on average larger than the overall mean. On the other hand, for those with some debt, the amount of average expenditure increased as the size of debt burden increased.[12]

Finally, households which had made more than one major purchase were studied in comparison to single purchasers and nonpurchasers combined. There were some shifts in importance among the predictors. A recent change of residence, for example, turned out to be strongly associated with "multiple-purchase" households. The results for debt repayments-to-income, however, were virtually unchanged from the basic MCA results presented in Exhibit 17.

As regards the focal issue of the MCA analysis--the impact of debt burden on subsequent spending--none of the alternative tests gave much support to the notion that heavy debt deters spending.

FOOTNOTES

1. The August 1977 survey was cosponsored by the Federal Reserve Board, the Comptroller of the Currency and the Federal Deposit Insurance Corporation. Basic results of the survey are presented in the Federal Reserve's 1977 Consumer Credit Survey, authored by Thomas A. Durkin and Gregory C. Elliehausen. Part of the 1977 panel was reinterviewed in August 1978 in connection with the Survey Research Center's regular quarterly survey on consumer attitudes.

2. One rule of thumb was that whenever the annual rate of credit expansion went above 2 percent of disposable income, a curtailment of spending was imminent. During the upswing following the 1973-75 recession, this particular ratio first crossed 2 percent in the fourth quarter of 1976, yet no significant slowdown in consumer spending emerged for at least the next eight quarters.

3. By stretching out the period of repayment, repayments in a particular month per dollar loaned are smaller. With smaller repayments, the net flow of credit becomes larger relative to any given volume of extensions. The larger is the net flow relative to the gross extensions flow, the smaller will be the impact that a given percentage change in extensions has on percentage change in net flow. Hence the growth rate of outstandings becomes less responsive to changes in extensions as maturities lengthen.

4. For a discussion of the extent of this activity see, David F. Seiders, Working Paper No. 25: Junior Mortgage Financing and Other Borrowing Against Inflated Housing Equity, Credit Research Center, Purdue University, 1978.

5. Perhaps the most rigorous econometric study of the role of debt in expenditure decisions has been that of Frederic Mishkin in a series of articles appearing in various journals around 1975-77. Mishkin's main premise was that because consumers are averse to being illiquid, debt buildup and concentration of assets in durable goods tends to discourage further spending and encourage saving. In his basic model, Mishkin included the outstanding level of consumer installment debt as an independent variable in equations to explain durable goods expenditure and total consumer spending. Estimating these equations in first difference form, Mishkin found that the debt variable did indeed take on the expected negative sign with statistical significance. One interesting finding was that the debt variable begins to stimulate spending fairly early in a recession. In the 1973-75 recession the rate of consumer credit growth slowed quickly and began to spur consumption by the second quarter of 1974. See, for example, Frederic S. Mishkin, "What Depressed the Consumer? The Household Balance Sheet and the 1973-75 Recession," Brookings Papers on Economic Activity, 1:1977, pp. 123-164.

6. Exact quintiles could not be created because only ranges of income--not specific dollar figures--were available from the 1977 Survey. The class limits were chosen to approach quintiles as closely as possible for 1977; because precise dollar-income estimates were available for 1970, groupings for that year could be established which would be precisely the same proportion of the income distribution as for the corresponding 1977 respondents. As an example, the five lowest income classes in the 1977 survey contained 20.6 percent of the respondents, forming an income "quintile" of $0-5,999. For 1970, exactly 20.6 percent of the respondents could be grouped together, with the upper class boundary equal to the highest income level within the group. This boundary happened to be $4,000.

FOOTNOTES (Continued)

7. Income here is gross family income rather than disposable personal income generally used in similar ratios calculated from economic aggregates. No adjustments were made for tax liabilities.

8. The small number of observations in 1970 for higher asset categories tempers this conclusion to some extent.

9. The β-statistic is equivalent to the standardized regression coefficient, i.e., the regression coefficient multiplied by the standard deviation of the predictor and divided by the standard deviation of the dependent variable.

10. Major expenditures include automobile purchases and a variety of other outlays principally for durable consumer goods.

11. Had only auto purchases been incorporated in the dependent variable, the relationship with age of auto would likely have been stronger than shown in Table 1. In any case, it appears that households owning 3-year old cars in the fall of 1977 were more likely to have made a major purchase of some type during the next 12 months.

12. Average amount of purchase for a given category of households includes the effect of those which made no purchases. Thus the higher average outlay for the high debt burden group partially reflects their previously discussed higher frequency of purchase.

EXHIBIT I

CONSUMER INSTALLMENT CREDIT
ANNUAL AND QUARTERLY DATA, SELECTED YEARS

Period	Billions of dollars				Percent
	Seasonally adjusted annual rate (SAAR)			End of period	(SAAR)
	Extended	Liquidated	Net change	outstanding	Growth rate
1955	40.3	34.9	5.3	30.3	19.9
1960	50.8	47.0	3.8	45.0	9.2
1965	79.9	71.6	8.3	73.9	12.0
1970	115.0	110.4	4.6	105.5	4.5
1975	180.4	172.7	7.8	177.4	5.6
1976	211.0	189.4	21.6	199.0	11.9
1977	254.1	218.8	35.3	230.8	17.1
1978	298.6	253.5	45.1	273.6	18.3
1973-Q1	172.1	147.7	24.4	136.6	18.6
Q2	172.0	151.1	20.8	143.9	15.0
Q3	172.4	155.1	17.2	149.8	12.0
Q4	175.2	157.1	18.1	155.1	12.2
1974-Q1	171.4	161.0	10.3	153.2	6.8
Q2	177.5	163.1	14.4	157.6	9.3
Q3	176.8	164.7	12.1	161.6	7.6
Q4	163.9	164.3	-0.4	161.5	-0.2
1975-Q1	166.7	166.8	-0.0	160.0	-0.0
Q2	171.2	170.3	0.8	161.9	0.5
Q3	186.9	174.0	12.9	167.3	7.9
Q4	195.8	179.1	16.6	177.3	10.0
1976-Q1	202.6	184.3	18.0	171.6	10.7
Q2	204.2	183.6	20.6	179.1	11.9
Q3	211.0	190.2	20.8	186.7	11.6
Q4	221.8	197.1	24.6	193.9	13.4
1977-Q1	240.4	209.0	31.3	197.5	16.4
Q2	250.8	216.6	34.2	208.9	17.1
Q3	254.9	222.1	31.7	219.6	15.7
Q4	270.3	228.8	41.5	230.8	19.2
1978-Q1	274.6	237.1	37.5	233.8	16.4
Q2	301.4	251.0	50.3	249.8	21.2
Q3	304.9	261.8	43.1	263.3	17.3
Q4	313.0	266.6	46.4	275.6	17.8
1979-Q1	314.1	273.1	41.0	278.5	15.0
Q2	324.2	284.3	39.9	291.9	14.1
Q3	332.3	294.9	37.3	305.2	12.8
Q4	319.3	295.6	23.8	311.1	7.9

Amounts extended are new credit granted during the period. Amounts liquidated are primarily repayments on existing debt, but also include charge-offs, merchandise returns and other subtractions from balances owed. Net change is the difference between extensions and liquidations, that is, the net addition to the stock of debt outstanding.
Note: Figures include gasoline company credit card data after 1970.

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EXHIBIT 2

CONSUMER INSTALLMENT CREDIT GROWTH RATES

Break in series due to including gasoline companies after 1970. Constant dollar series reflects deflation by personal consumption expenditure deflator.

EXHIBIT 3

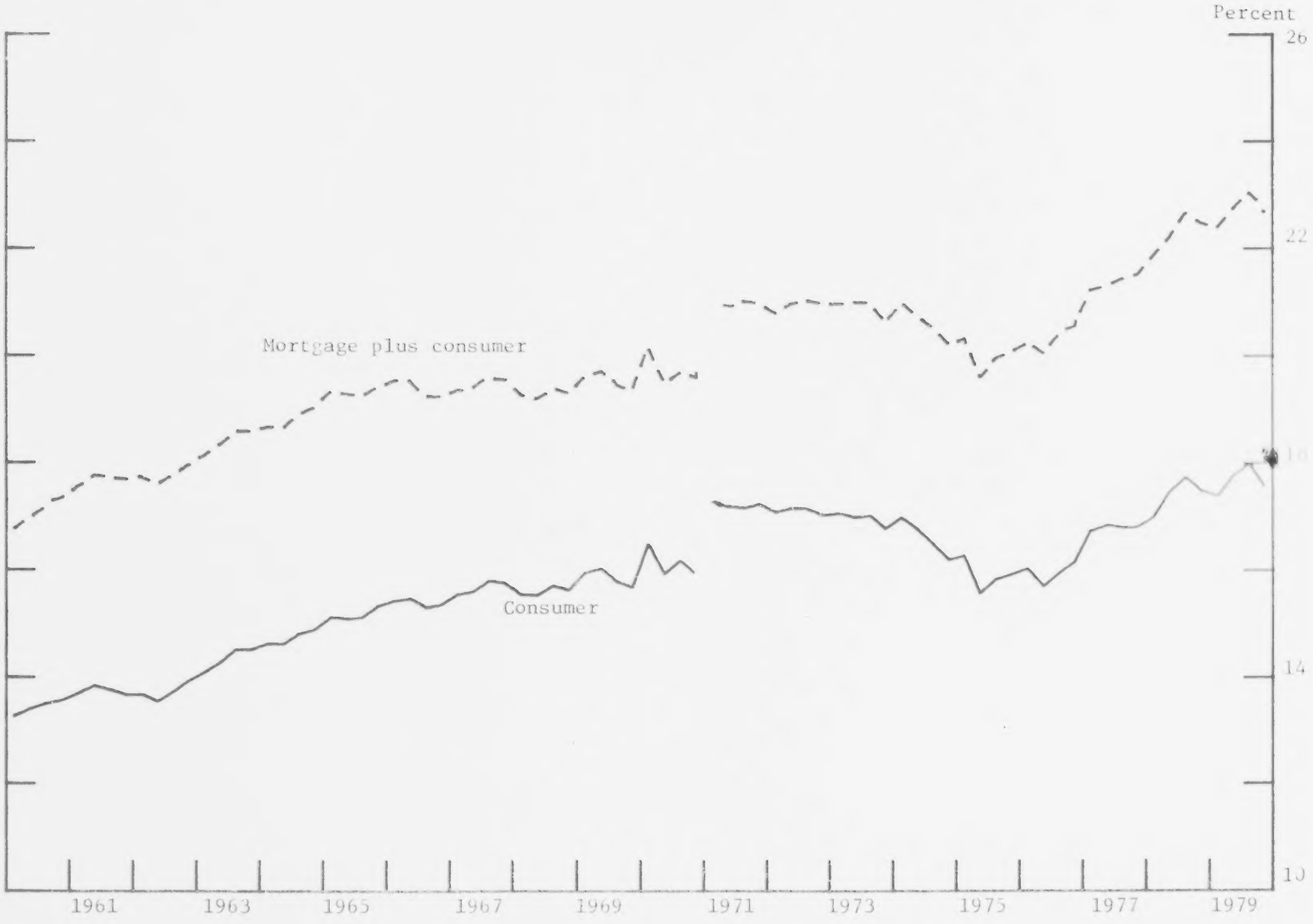
HOUSEHOLD DEBT REPAYMENTS AND RATIOS TO DISPOSABLE PERSONAL INCOME

Period	Repayments (billions of dollars)		Ratios to disposable income (percent)	
	Consumer installment	Total (incl. mortgage)	Consumer installment	Total (incl. mortgage)
1960	46.9	59.6	13.4	17.1
1965	71.6	91.2	15.2	19.3
1970	110.4	135.2	16.1	19.7
1975	172.6	216.9	15.9	20.0
1976	188.9	239.5	15.9	20.2
1977	219.2	278.3	16.8	21.4
1978	254.1	326.1	17.4	22.3
1979	287.0	367.7	17.7	22.7
1973-Q1	147.8	181.6	17.1	21.0
Q2	151.2	186.6	17.0	20.9
Q3	155.1	191.1	17.0	21.0
Q4	157.1	192.8	16.8	20.6
1974-Q1	161.1	199.1	17.0	21.0
Q2	163.1	201.2	16.8	20.7
Q3	164.7	204.6	16.5	20.5
Q4	164.4	204.8	16.2	20.2
1975-Q1	166.8	208.4	16.3	20.3
Q2	170.4	214.5	15.6	19.6
Q3	174.0	218.9	15.8	19.9
Q4	179.2	225.8	15.9	20.1
1976-Q1	184.6	232.3	16.0	20.2
Q2	183.6	232.9	15.7	19.9
Q3	190.2	242.6	15.9	20.3
Q4	197.2	250.1	16.1	20.5
1977-Q1	209.1	264.5	16.7	21.2
Q2	216.6	273.4	16.8	21.3
Q3	222.2	282.9	16.8	21.4
Q4	228.8	292.2	16.8	21.5
1978-Q1	237.2	304.3	17.0	21.8
Q2	251.0	318.5	17.5	22.2
Q3	261.8	333.9	17.7	22.6
Q4	266.5	342.2	17.5	22.4
1979-Q1	273.4	350.8	17.4	22.3
Q2	284.3	363.6	17.8	22.7
Q3	294.9	376.7	18.0	23.0
Q4	295.3	379.8	17.6	22.6

Note: After 1970 repayments series includes gasoline company credit card data. This caused a slight discontinuity in the ratios to income of approximately 0.8 percentage points between 1970 and later periods. Mortgage repayments, included with installment credit in total repayments, are staff estimates of scheduled payments of principal and interest (prepayments excluded).

EXHIBIT 4

HOUSEHOLD DEBT BURDEN
DEBT REPAYMENTS RELATIVE TO DISPOSABLE PERSONAL INCOME

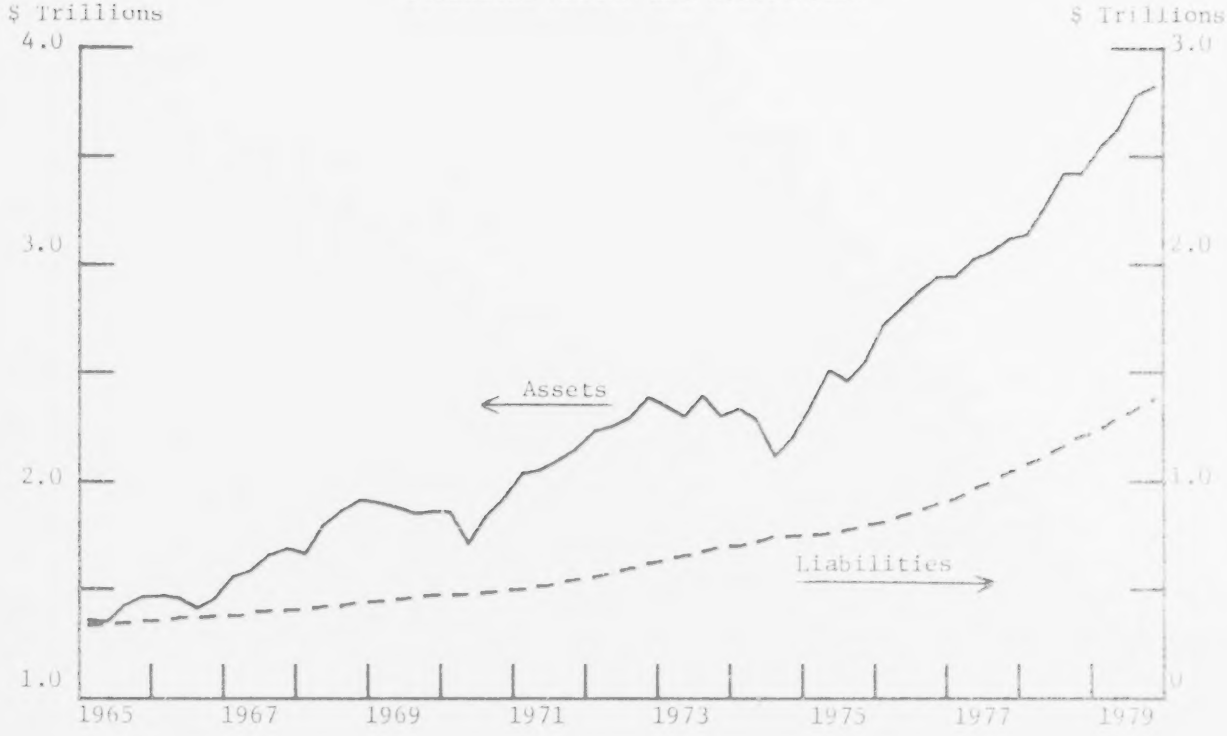


Break in series due to including gasoline companies after 1970.

EXHIBIT 5

HOUSEHOLD SECTOR FINANCIAL POSITION

Financial Assets and Liabilities



Financial Net Worth

EXHIBIT 6

REAL FINANCIAL NET WORTH PER CAPITA

REAL TOTAL NET WORTH PER CAPITA

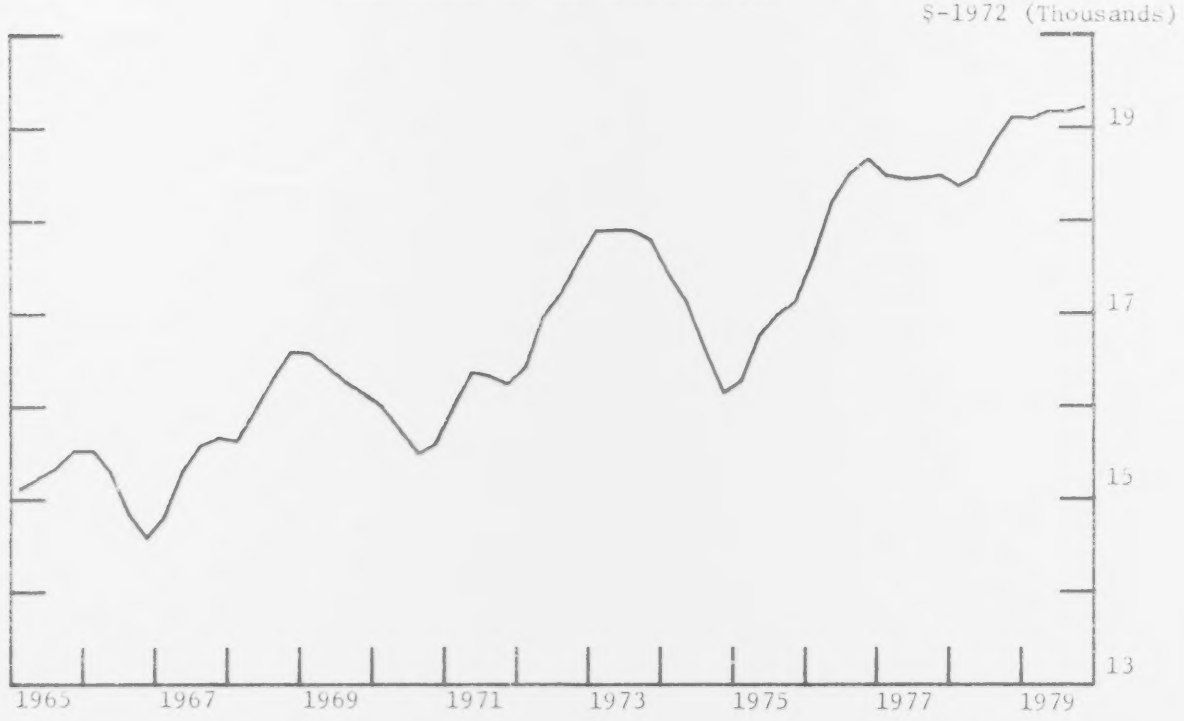
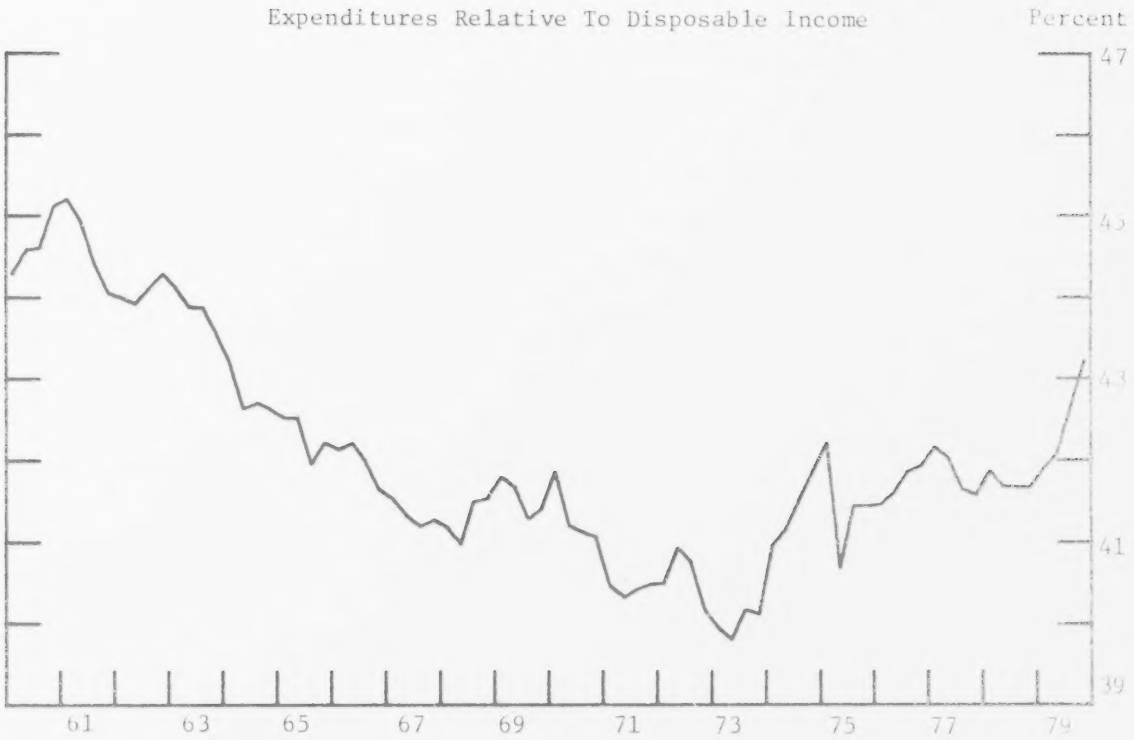


EXHIBIT 7

NONDISCRETIONARY HOUSEHOLD OUTLAYS



Nondiscretionary expenditure is an estimate based on Commerce Department data for outlays on food, fuel oil and coal, housing services and fractions of household operating costs, gasoline and oil, and "other" services. In the chart to the right, debt includes repayments on both mortgage and consumer installment debt.

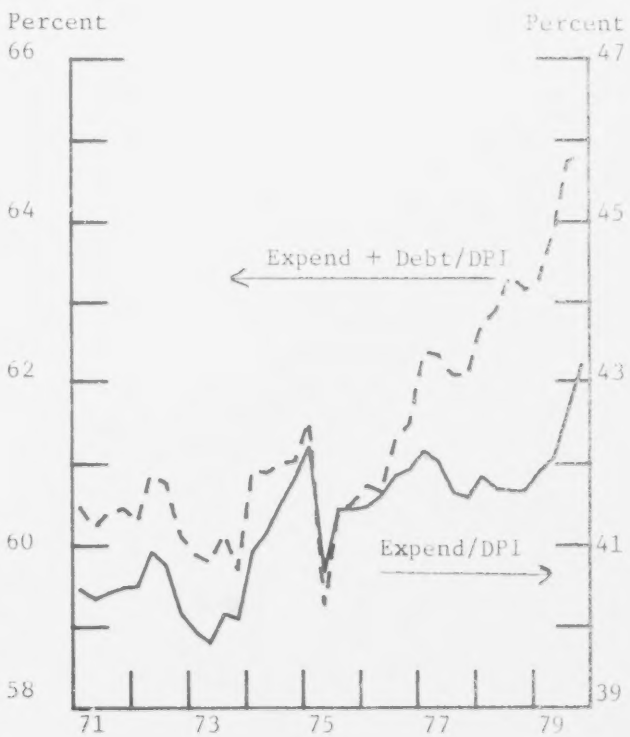


EXHIBIT 8

Consumer and Mortgage Loan Delinquency Rates
(Number Delinquent as Percent of Total Number Outstanding)
All Series Seasonally Adjusted

	Installment Loans 30 days or more delinquent			Mortgage Loans 60 days or more delinquent	
	Commercial Banks		Auto		
	Closed-end	Bank-card	Fin. Co.	MBA Series	S&Ls
1970	1.85	NA	2.46	0.84	n.a.
1971	1.78	NA	2.27	1.01	n.a.
1972	1.87	NA	2.11	1.04	n.a.
1973	2.07	NA	2.31	1.17	0.92
1974	2.64	2.58	2.61	1.20	1.07
1975	2.60	2.60	2.39	1.28	1.46
1976	2.39	2.26	2.01	1.32	1.43
1977	2.37	1.73	2.07	1.30	1.14
1978	2.41	2.15	2.23	1.28	0.96
1979	2.43	2.38	2.26	1.24	0.89
1976 - Q1	2.47	2.33	1.90	1.21	1.50
Q2	2.38	2.42	1.97	1.37	1.46
Q3	2.38	2.25	2.00	1.34	1.39
Q4	2.37	2.04	2.11	1.34	1.31
1977 - Q1	2.37	1.2	2.01	1.29	1.24
Q2	2.40	1.64	2.08	1.34	1.17
Q3	2.37	1.72	2.07	1.20	1.12
Q4	2.34	1.75	2.12	1.26	1.06
1978 - Q1	2.47	1.83	2.23	1.29	1.00
Q2	2.39	1.96	2.18	1.28	0.97
Q3	2.40	2.30	2.23	1.29	0.95
Q4	2.38	2.48	2.26	1.25	0.91
1979 - Q1	2.25	1.97	2.11	1.18	0.89
Q2	2.42	2.38	2.25	1.21	0.89
Q3	2.50	2.55	2.21	1.26	0.87
Q4	2.53	2.61	2.46	1.29	0.89

Sources: American Bankers Association, Federal Reserve Board, Mortgage Bankers Association, Federal Home Loan Bank Board.

EXHIBIT 9

PROPORTION OF HOUSEHOLDS 1/ WITH INSTALLMENT DEBT
AND DEBT/INCOME RATIOS

Approximate Income Quintiles			Percent Having Debt2/		For Households with Installment Debt Debt as a Percent of Gross Household Income (means of individual ratios)3/			
Dollar Amounts		Percent			Outstandings		Repayments	
1970	1977	Distribution	1970	1977	1970	1977	1970	1977
0 - 4000	0 - 5999	20.6	22.9	30.7	21.8	29.9	18.7	24.5
4001 - 7300	6000 -10999	19.4	46.6	48.6	18.4	17.9	12.5	13.7
7301 -11076	11000 -17499	24.3	60.8	63.8	15.5	16.3	10.5	11.1
11077 -15350	17500 -25000	18.3	67.4	66.3	11.3	13.1	8.2	8.3
Over 15350	over 25000	17.3	47.2	58.3	9.6	10.6	6.7	8.0
All Households		1/3/ 100.0	49.1	53.5	14.6	16.5	10.5	11.5

Sources: University of Michigan, 1970 Survey of Consumer Finances data tape;
Federal Reserve Board, 1977 Consumer Credit Survey tape.

1. "All Households" is defined as those households in the survey for whom the amount of income and amount of debt were available. In the 1970 survey, the University of Michigan estimated these magnitudes for households not reporting them. In the 1977 survey, missing income and debt amounts were not estimated. This resulted in dropping from 350-430 households (out of 2563) from the 1977 computations.

2. The proportion of survey respondents in debt is based on the 2225 households for whom income magnitudes were known. When all survey respondents are included, the 1977 proportion in debt is 50.2 percent instead of 53.5.

3. Individual debt to income ratios were computed, and the mean of those taken for each quintile and for all households. When debts are summed for all households with debt and divided by the sum of all incomes, the comparison is as follows:

	Outstandings		Repayments	
	1970	1977	1970	1977
Ratio to Income:	13.6	15.0	10.3	9.4

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EXHIBIT 10

PERCENTAGES OF HOUSEHOLDS HOLDING CREDIT CARDS

Income Class (dollars)	Any 1/ Card	Bank Card	Store Card
0-5,999	26.6	7.8	21.4
6,000 - 10,999	51.4	23.6	41.7
11,000 - 17,449	71.2	38.3	60.8
17,500 - 24,999	81.3	57.0	73.5
25,000 and Over	92.7	72.8	83.2
All Classes 2/	62.8	37.6	53.7

Source: 1977 Consumer Credit Survey.

1. Includes gasoline credit cards, "travel and entertainment" cards and others not shown separately.
2. Includes cases where income not ascertained.

EXHIBIT 11

SHARES OF TOTAL INSTALLMENT DEBT OUTSTANDING BY INCOME GROUP
1970 AND 1977 SURVEY DATA

Approximate income quintiles			Mean debt amount				Total debt		Percent share of debt		Adjusted share of debt[1]	
			Households in debt		All households							
Dollar amounts		Percent										
1970	1977	distribution	1970	1977	1970	1977	1970 (000)	1977 (000)	1970	1977	1970	1977
0 - 4000	0 - 5999	20.6	595	1,141	137	315	72.6	138.1	3.9	4.6	3.8	4.4
4001 - 7300	6000 -10999	19.4	1,228	1,681	572	778	286.2	321.2	15.2	10.7	15.5	10.9
7301 -11076	11000 -17499	24.3	1,542	2,369	939	1,457	590.5	741.6	31.4	24.7	25.6	19.6
11077 -15350	17500 -25000	18.3	1,648	3,082	1,110	2,021	524.1	798.2	27.9	26.6	30.2	28.1
over 15350	over 25000	17.3	1,950	4,779	919	2,700	407.5	998.1	21.7	33.3	24.9	37.0
All families[1]		100.0	1,488	2,720	729	1,407	1,880.9	2,997.9	100.0	100.0	100.0	100.0

Sources: University of Michigan, 1970 Survey of Consumer Finances data tape; Federal Reserve Board 1977 Consumer Credit Survey tape.

1. The proportions of debt attributable to each income group are adjusted in these 2 columns to compensate for the deviation of the "quintile" size from 20 percent. Shares for each group were multiplied by 20/N, where N is the percent of respondents in the group. Adjusted shares were forced to total 100.0.

EXHIBIT 12

PROPORTION OF HOUSEHOLDS 1/ WITH HOME MORTGAGE DEBT
AND DEBT/INCOME RATIOS

Approximate Income Quintiles			Percent Having Debt 2/		For Households with Mortgage Debt: Debt as a Percent of Gross Household Income (means of individual ratios) 3/			
Dollar Amounts		Percent			Outstandings		Repayments 4/	
1970	1977	Distribution	1970	1977	1970	1977	1970	1977
0 - 4000	0 - 5999	20.6	7.9	12.9	217.9	342.5	31.2	49.7
4001 - 7300	6000 - 10999	19.4	19.6	27.1	109.9	127.9	15.4	18.7
7301 - 11076	11000 - 17499	24.3	39.4	43.1	94.3	105.6	11.9	14.2
11077 - 15350	17500 - 25000	18.3	58.1	63.9	85.5	84.1	10.5	11.3
over 15350	over 25000	17.3	60.7	70.5	61.7	62.3	8.1	8.3
All Households	1/3/	100.0	36.1	42.3	89.5	103.7	11.6	14.4

Sources: University of Michigan, 1970 Survey of Consumer Finances data tape; Federal Reserve Board, 1977 Consumer Credit Survey tape.

1. See Table 1, fn 1.

2. See Table 1, fn 2. When all survey respondents are included in 1977 computations, the "all households" proportion in debt for that year is 40.4, instead of 42.3 per cent.

3. See Table 1, fn 3. When debts are summed for all households having debt, and divided by the sum of incomes, the ratios are as follows:

	Outstandings		Repayments	
	1970	1977	1970	1977
Ratio to income:	76.0	79.0	10.0	11.3

4. Repayments include scheduled payments of principal and interest and also property taxes where included in the monthly mortgage payment. About 95 percent of the respondents with mortgages included these latter items in repayment amount.

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EXHIBIT 13

PROPORTION OF HOUSEHOLDS 1/ WITH DEBT (MORTGAGE OR CONSUMER) AND DEBT/INCOME RATIOS

Approximate Income Quintiles			Percent Having Debt 2/		For Households with Debt: Debt as a Percent of Gross Household Income (means of individual ratios) 3/			
Dollar Amounts		Percent			Outstandings		Repayments	
1970	1977	Distribution	1970	1977	1970	1977	1970	1977
0 - 4000	0 - 5999	20.6	27.8	37.0	70.4	109.2	24.1	39.4
4001 - 7300	6000 -10999	19.4	55.0	58.8	51.8	71.3	16.2	19.9
7301 -11076	11000 -17499	24.3	72.8	74.5	64.8	75.5	15.6	17.8
11077 -15350	17500 -25000	18.3	81.8	83.3	71.0	76.1	14.4	15.7
over 15350	over 25000	17.3	74.3	81.1	56.7	63.0	11.1	11.8
All Households 1/3/		100.0	62.0	66.5	62.9	75.8	15.3	18.8

Sources: University of Michigan, 1970 Survey of Consumer Finances data tape;
Federal Reserve Board, 1977 Consumer Credit Survey tape.

1. See Table 1, fn 1.
2. See Table 1, fn 2.
3. See Table 1, fn 3. When debts are summed for all households having debt and divided by the sum of these households' incomes, the ratios are as follows:

	Outstandings		Repayments	
	1970	1977	1970	1977
Ratio to income:	61.1	70.3	14.0	17.1

EXHIBIT 14

ESTIMATED EFFECT OF AGE DISTRIBUTION ON CONSUMER INSTALLMENT DEBT MEASURES

Age, head of household	U.S. population Percentage distribution		1977 Survey data		Population-Weighted Variables			
			Percent in Debt	Debt amount1/ (mean)	Percent in debt		Debt amount	
	1970	1977			1970	1977	1970	1977
(1)	(2)	(3)	(4)	(5)	(6) (Col 4x2)	(7) (Col 4x3)	(8) (Col 5x2)	(9) (Col 5x3)
Under 25	6.8	8.6	63.1	$ 1254	4.3	5.4	85	108
25-34	18.5	22.2	67.5	1614	12.5	15.0	299	358
35-44	18.6	16.7	65.9	1978	12.2	11.0	368	330
45-54	19.5	16.7	56.3	1548	11.0	9.4	302	259
55-64	17.1	15.7	41.3	989	7.1	6.5	169	155
65-74	12.2	12.6	16.2	223	2.0	2.0	27	28
75 and over	7.3	7.5	5.5	111	0.4	0.4	8	8
All age groups[2]	100.0	100.0	50.3	1266	49.5	49.7	1258	1246

Sources: Federal Reserve Board, 1977 Consumer Credit Survey data tape; U.S. Department of Commerce, Bureau of the Census, Current Population Reports (P-20 series), various issues.

1. Mean calculated including families with no debt.

2. For all age groups, columns 6 through 10 represent summations of figures shown for individual age groups. The "all age group" line for columns 4 and 5 is calculated directly from data for individual survey respondents.

EXHIBIT 15

PROPORTION OF LOW-INCOME HOUSEHOLDS1/
WITH INSTALLMENT DEBT
BY AMOUNT OF TOTAL ASSETS2/

Asset Value Category (Dollars)	Proportion of Households in Asset Category		Proportion of Asset Category with Some Installment Debt		Difference 1977 vs. 1970 (percentage points)
	1970	1977	1970	1977	
No Assets Reported	28.9	21.1	31.2	34.0	2.8
1 - 1,000	14.7	25.1	28.2	35.7	7.5
1,001 - 5,000	14.5	10.7	22.1	26.5	4.4
5,001 - 10,000	10.0	6.5	22.6	30.0	7.4
10,001 - 35,000	24.6	22.2	15.3	27.5	12.2
35,001 - 50,000	3.0	6.5	12.5	23.3	10.8
50,001 - 100,000	3.2	4.4	5.9	20.0	14.1
Over 100,000	1.1	3.5	0.0	37.5	37.5
All low-income Households3/	100.0	100.0	22.9	30.7	7.8

1. Low-income households consist of the first quintile of the income distribution in each year. In 1970 the low-income quintile included respondents with 1969 gross family incomes of $4,000 or below; in 1977 the quintile included all those with 1976 incomes of $6,000 or below. Respondents for which no asset information was available were excluded.

2. Total assets cover both financial and physical assets, and include savings accounts, federal and state government securities, corporate stocks and bonds, mutual funds, certificates of deposit, residences and other real estate.

3. In 1970 532 households were in the low-income quintile; in 1977 low-income households numbered 459.

EXHIBIT 16

AVERAGE INSTALLMENT REPAYMENTS-TO-INCOME RATIO
FOR LOW-INCOME HOUSEHOLDS1/ WITH SOME INSTALLMENT DEBT
BY AMOUNT OF TOTAL ASSETS2/

Asset Value Category (Dollars)	Proportion of Low-Income Debtors In Asset Category		Repayments/Income Ratio		Difference 1977 vs. 1970 (percentage points)
	1970	1977	1970	1977	
No Assets Reported	39.8	25.0	18.3	23.7	5.4
1 - 1000	18.6	30.6	23.6	25.4	1.8
1001 - 5000	13.6	10.5	23.3	26.7	3.4
5001 - 10,000	9.3	7.3	27.9	13.0	-14.9
10,001 - 35,000	16.1	12.9	14.9	22.3	7.4
35,001 - 50,000	1.7	5.6	12.5	27.7	15.2
50,001 - 100,000	0.8	3.2	2.0	43.3	41.3
Over 100,000	--	4.8	--	38.5	--
All low-income Debtors3/	100.0	100.0	20.1	25.1	5.0

1. Low-income households consist of the first quintile of the low-income distribution in each year. In 1970 the low-income quintile included respondents with 1969 gross family incomes of $4,000 or below; in 1977 the quintile included all those with 1976 incomes of $6,000 or below. Respondents for whom no asset information was available, or for whom a repayments-to-income ratio could not be calculated, were excluded.

2. Total assets cover both financial and physical assets, and include savings accounts, federal and state government securities, corporate stocks and bonds, mutual funds, certificates of deposit, residence and other real estate.

3. In 1970, 118 low-income households with debt were used in constructing the table; the number of such households for 1977 was 124.

EXHIBIT 17

MULTIPLE CLASSIFICATION ANALYSIS OF
MAJOR HOUSEHOLD EXPENDITURES

Household Characteristics		Mean Purchase Frequency[1]	
Category	Size of category	Unadjusted	Adjusted
ALL RESPONDENTS	718	49.6	
Ratio of Installment Payments to Family Income (percent) (1977 Survey)			
No debt	320	40.6	48.9
0 - 10	225	56.5	49.3
11 - 20	90	56.7	50.5
Over 20	42	59.5	54.7
Income Categories (Dollars) (1977 Survey)			
0 - 5,999	378	29.8	37.4
6,000-10,999	125	42.8	46.1
11,000-17,499	101	57.4	50.8
17,500-25,000	68	56.1	53.1
Over 25,000	44	57.0	54.6
Changed Residence Within Past 12 Months (1978 Survey)			
No	506	49.6	51.2
Yes	39	64.1	53.0
Total Assets (Dollars) (1977 Survey)			
0 - 5,000	141	49.7	48.6
5,001-29,999	136	43.4	48.9
30,000-49,999	155	51.6	51.3
50,000-99,999	170	51.8	48.3
Over 99,999	116	50.9	51.2
Number of Minor Dependents (1977 Survey)			
None	378	42.9	51.7
1	125	58.4	51.8
2	101	62.4	51.3
3	68	48.5	45.7
Over 3	44	52.3	41.5

Household Characteristics		Mean Purchase Frequency[1]	
Category	Size of category	Unadjusted	Adjusted
Age of Family Head (Years) (1977 Survey)			
Under 25	44	72.7	79.3
25-34	173	68.2	67.1
35-44	133	55.6	55.9
45-54	138	50.0	45.6
55-64	117	30.8	28.7
65-74	80	30.0	33.7
Over 74	33	9.1	19.0
Inflation Perception (1978 Survey) (Percentage price increase last 12 months)			
0 - 1	25	48.0	43.9
2 - 5	112	50.0	47.0
6 - 9	144	57.0	52.5
10	141	54.6	50.4
11 - 14	67	56.7	55.4
15 - 25	104	46.2	46.0
Over 25	51	47.1	47.6
Better/worse Now Than Year Ago (1978 Survey)			
Better	291	56.7	50.1
Same	212	48.6	48.4
Worse	209	44.8	51.0
Model Year of First Vehicle (1977 Survey)			
No car	57	22.8	45.2
1977	73	50.7	49.2
1976	73	52.1	44.8
1975	98	63.3	58.1
Older than 1975	447	54.7	49.5
Model Year of Second Vehicle (1977 Survey)			
No second car	407	42.4	49.4
1977	29	65.5	55.3
1976	30	66.7	53.9
1975	27	70.4	64.8
Older than 1975	115	61.4	47.0

1. Mean purchase frequency results are not shown for those "Not in category" or "No information" categories of the predictors.

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EXHIBIT 18

STATISTICAL MEASURES OF EXPLANATORY POWER FOR MCA TEST OF EXHIBIT 17

Unadjusted R^2	.171
Adjusted R^2	.116
β-Values for:	
Age of family head	.334
Income	.110
Number of dependents	.108
Model year of second vehicle mentioned	.084
Price perception	.070
Model year of first vehicle mentioned	.070
Move - 12 months	.063
Better or worse off now	.057
Repayments/income	.027
Total assets	.026

Unadjusted R^2 - This multiple correlation coefficient indicates the proportion of variance in the dependent variables explained jointly by 10 predictors.

Adjusted R^2 - This coefficient estimates the proportion of variance in the dependent variable jointly explained by the predictors, adjusted for the degrees of freedmon lost in the estimation process.

β - Provides a measure of the ability of the predictor to explain variation in the dependent variable after adjusting for the effects of all other predictors. This is not in terms of percent of variance explained, but is a measure of the number of standard deviation units the dependent variable moves when the explanatory variable changes by one standard deviation. Higher β values indicate better predictors.

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REPRINT No. 1: John J. McConnell, "Evaluation Model Can Maximize Single Family Servicing Profits," *Mortgage Banker*, March 1975; and "Profit/Loss Evaluation Model Has Varied Applications," *Mortgage Banker*, May 1975 (Out-of-print)
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REPRINT No. 9: John J. McConnell, "Price Distortions Induced by the Revenue Structure of Federally-Sponsored Mortgage Loan Programs," *Journal of Finance*, September 1977
REPRINT No. 10: James F. Smith, "The Equal Credit Opportunity Act of 1974: A Cost/Benefit Analysis," *The Journal of Finance*, May 1977
REPRINT No. 11: David S. Kidwell and Richard L. Peterson, "A Close Look at Credit Unions," *The Bankers Magazine*, January-February 1978
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WORKING PAPER NO. 38

Effects of Consumer Loan Rate Ceilings on Competition Between Banks and Finance Companies

Krannert Graduate School of Management – Purdue University

EFFECTS OF CONSUMER LOAN RATE CEILINGS ON COMPETITION BETWEEN BANKS AND FINANCE COMPANIES

A. Charlene Sullivan*

Abstract

Whether or not commercial banks and consumer finance companies compete in making loans to consumers is an issue that has been addressed by the Federal Reserve Board and the Justice Department in a series of cases involving mergers of banks and finance companies and among finance companies. Generally, the Federal Reserve Board has concluded that consumer finance companies compete with commercial banks in the area of personal loans to individuals. Yet in recent cases, the Justice Department argued that these lenders do not compete. This paper reconciles the opposing points of view regarding the extent of competition between banks and finance companies for direct consumer loans. The data used in this paper provided the opportunity to examine inter-institutional competition in two local markets which differ extremely in terms of consumer loan rate structures. In addition, superior measures of consumer credit risk for a sample of borrowers from banks and finance companies were analyzed.

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Our results support the hypothesis that consumer loan markets are not segmented by risk when lenders operate under equal and unrestrictive consumer loan rate ceilings. However, in markets where there exists different and restrictive rate ceilings for banks and finance companies, the consumer loan market is segmented by risk. Thus, the anti-competitive effects of a merger between a bank and a finance company or between two finance companies must be considered in the context of the rate ceiling applicable in the markets common to the two lenders.

EFFECTS OF CONSUMER LOAN RATE CEILINGS ON COMPETITION BETWEEN BANKS AND FINANCE COMPANIES

A. Charlene Sullivan

Whether or not commercial banks and consumer finance companies compete in making loans to consumers is an issue that has been addressed by the Federal Reserve Board and the Justice Department in a series of cases involving mergers of banks and finance companies and among finance companies.[1] Generally, the Federal Reserve Board has concluded that consumer finance companies compete with commercial banks in the area of personal loans to individuals.[2] Until recently, this position has been echoed by the Justice Department.[3] However, in 1979, Justice opposed the acquisition of American Investment Company by Household Finance Corporation, principally on the grounds that making of direct cash loans by finance companies was a line of commerce within the meaning of section 7 of the Clayton Act.[4]

The two opposing points of view were brought into sharp focus in the differing opinions of the judges at the District Court and Court of Appeals levels. At the trial court level the judge held that the "market for the business of making direct cash loans consists of the consumer loan activities of commercial banks, credit unions, thrift institutions and finance companies."[5] The opposed merger was, therefore, not anticompetitive and the complaint of Justice was dismissed. In reversing that judgment, the Court of Appeals ruled that "finance

companies offer unique products and services to a class of higher-risk customers than are serviced by other financial institutions."[6]

This study uses a significant body of empirical evidence not available at the time of the trial to reconcile these diverse positions. The data permit an improved analysis in three important respects. First, although the Federal Reserve Board has recognized that the market for personal loans to individuals is limited geographically to local markets,[7] significant weight in the Household case was given to a national survey of consumer loans [5]. This analysis remedies that deficiency by focusing on two local markets subject to diverse rate ceilings on commercial banks and finance companies.

Second, the Court of Appeals placed great emphasis upon differences in the risk characteristics of borrowers from banks and finance companies, although several of the research studies introduced as evidence provided incomplete measures of risk [5, 7, 9, 10, 16]. Later studies have suffered from similar deficiencies in the adequacy of their data bases [11, 12]. In contrast to these studies, the data used in this research were obtained from banks and finance companies, as well as from personal interviews with consumers in local markets. Consequently, a more refined measure of risk can be applied to borrowers from the two institutions in order to assess the degree of risk segmentation in these local markets.

Finally, the chief economic witness for the Justice Department appropriately criticized then existing studies that included borrowers from both banks and finance companies.[8] He pointed out that, if the bank loan had been obtained first, the borrower might have been in

a higher risk class when the loan from the finance company was obtained. Hence, the existence of loans from the two lenders was not evidence that these lenders were competing for consumers in the same risk class. This study meets that problem by analyzing the risk characteristics of only two classes of consumers: those that had loans only from commercial banks and those that had loans only from finance companies.

The analysis enabled by this unique data base permits a reconciliation of the two opposing points of view. Where rate ceilings were nonrestrictive and equally applicable to banks and finance companies, the institutions competed actively for consumer loan customers.[9] This conclusion supports the position taken by the District Court. However, in the market where the two types of lenders operated under different rate ceilings, the credit risk characteristics of borrowers from banks and finance companies were significantly different--the position of the Court of Appeals. Thus, competition among banks and finance companies and appropriate policies relating to their proposed mergers are largely a function of the rate ceilings applicable to the local markets affected by the merger.

The next section of the paper examines the economic rationale for risk segmentation of the consumer loan market and the results of empirical studies of the phenomenon. In Section II, the data are described and in Section III the analyses and results are presented. We conclude in Section IV with a discussion of the public policy implications of the results.

I. Segmentation in the Market for Consumer Loans

In this section we examine the economic rationale for segmentation and review the evidence of the segmentation in the consumer loan market from prior analyses of the phenomenon.

Is Segmentation Rational? Boczar stated ([5], p. 245) in his study of segmentation: "Consumer credit researchers have generally believed that the market for consumer credit is substantially segmented on the basis of risk. That is banks supposedly serve low risk borrowers while finance companies cover the high risk borrower. This market risk segmentation is thought to be caused by regulatory constraints and the historical practices of the two industries."

Regulatory constraints aside, is there an economic rationale for segmentation?[10] Risk segmentation in the consumer loan market could be the result of economies of scale attainable from specialization in a particular risk class. In general, one might expect the contract enforcement efforts required for low-risk consumers to be substantially greater than those required for high-risk consumers. Credit contracts with high risk consumers often involve small loans with low monthly payments and inadequate collateral.[11] Since enforcement costs are largely fixed in relation to the size of loan lenders who have made the investment necessary to enforce high-risk contracts would be expected to specialize in order to reduce unit costs.[12] It is generally believed that consumer finance companies evolved as specialists to serve the needs of the low- and middle-income consumer who were considered as high risk.[13]

It is also generally believed that by historic practice banks emphasize stability and soundness and thus serve low-risk commercial and consumer customers. However, there are factors influencing bank management that reduce the probability that management would follow such a business strategy.

Commercial banks have been the only issuers of demand deposits and received a large percentage of loanable funds from such deposits at a zero explicit interest rate.[14] Thus, the cost of those funds was not related to the risk of banks' assets. In addition, the Federal Deposit Insurance premiums paid by a bank are unrelated to the probability of failure for that bank. With this subsidized source of funds commercial banks, compared to other lenders who did not have consumer demand deposits, could very profitably serve low-risk consumers. However, using results from the option literature, we know that if bank equity holders are viewed as holders of call options to buy the bank from the deposit-holders for the face amount of their demand deposits, the value of the option increases with the variance in the value of the bank.[15] Thus, holding other things constant, bank management would increase the risk of their investment portfolio in order to maximize shareholders' wealth.

In summary, we would not expect commercial banks to segment the consumer loan market on the basis of risk unless they were explicitly limited from serving high-risk consumers by restrictive rate ceilings on consumer loans. We tested this hypothesis by analyzing the credit risk characteristics of borrowers of banks and finance companies serving markets with restrictive and unrestrictive loan rate ceilings. The data analyzed allow us to supplement the results of that analysis with

information collected from the two types of lenders concerning the "most likely" rate of charge on personal loans and managements' impressions of competitive conditions in each market.

Previous Empirical Evidence. Empirical studies of competition between banks and finance companies for consumer loans have been of two types. The first type involves estimation of the effect of one type of lender on performance measures of other types of lenders in the same market. Smith [16] found, in state-by-state analysis of a national sample of bank loans, that the number of finance companies in a market had a significant negative effect on bank loan rates. In contrast, Greer [9] found no evidence that the existence of alternative sources of consumer loans in a market had an effect on loan rejection rates of consumer finance companies. Both of these studies used data collected at the state level to estimate local market conditions which may have led to the inconsistent conclusions. Heggestad ([11], p. 45) analyzed auto loan rates in a national sample of SMSAs and concluded that "bank rates are not affected by competition from consumer finance companies, credit unions or savings and loan associations." He also found that finance company rates were adversely affected by the presence of mutual savings banks, savings and loan associations and commercial banks. He concluded that "credit markets are not segmented by risk class" and that "commercial banks are able to compete effectively for most consumer loan accounts. The segmentation that does occur is due to the advantage of low cost demand deposits. Other firms are not able to compete effectively with commercial banks as their costs are significantly higher." ([11], p. 45). However, his conclusion is suspect

given the data analyzed. The loan rates studied were those quoted by various lenders on a $1400 auto loan secured by a vehicle valued at $3869. For such a well secured loan the risk characteristics of the borrowers are largely irrelevant to the quality of the loan [14]. Thus, one would expect to find wide variance and a great deal of overlap in the credit risk characteristics of consumers who were granted secured auto loans of this quality by banks and finance companies.

The other type of empirical studies of interinstitutional competition used cross-sectional analyses of risk characteristics of bank and finance company customers to evaluate the extent to which the two lenders segmented the consumer population by credit risk characteristics. Using national data, Boczar [5] found that two out of three finance company personal loan customers had risk-related characteristics that made them indistinguishable from bank loan customers. He concluded that "risk segmentation was not an effective barrier to interindustry competition" ([5], p. 255). However, he noted a need for more analysis with better risk measures and consideration of the effect of local market conditions such as loan rate ceilings on interinstitutional competition. Eisenbeis and Murphy ([7], p. 122) concluded that analysis of similar data from the state of Maine provided "little support for the belief that certain lender types are in fact segmenting markets or are serving significantly different customers." Finally, Johnson and Sullivan [12] found substantial overlap in the risk characteristics of a national sample of bank and finance company consumers. In the same study, personal interviews of finance company managers operating in Massachusetts revealed that, after a reduction in the small loan

rate ceiling in that state, national finance companies actively pursued customers of "bankable" quality while managers of local, independent finance companies indicated that most of their customers could not get a loan from a bank. Each of these studies used a limited number of personal characteristics of borrowers in an attempt to measure credit risk.

II. The Data Base

The data used in the study were collected in early 1979 in personal interviews of credit managers of banks and finance companies and consumers living in similar local markets in Waukegan/North Chicago, Illinois and Lake Charles, Louisiana. These local markets were chosen such that the economic conditions and socio-economic and demographic characteristics of the populations were basically similar but state consumer loan rate ceilings were extremely different.[16] The markets were also selected because they were relatively isolated. In other words, lenders in the selected markets primarily served only consumers living in the markets, and consumers in the area limited their search for consumer loans to the lenders in the local market.

These data provide a unique opportunity to analyze the effects of rate ceilings on market segmentation. Gathered at the local market level, the data set contains finance company and bank managers' perceptions of competition between the two types of creditors. In addition, extensive data reflecting the credit risk of a sample of consumers from the same local markets who had personal loans either from a bank or from a finance company are available. The creditor and consumer data are described below.

Bank Data. Consumer credit managers from each of the 12 commercial banks serving the two local markets in Illinois and Louisiana cooperated in the survey. Thus, although the number of observations was not large, the data fully represent bank activity in each of the local markets. On average, banks in Illinois were smaller than banks in Louisiana, a difference that is probably explained largely by the fact that Illinois is a unit banking state, while Louisiana has county-wide branching.[18] The concentration index indicates that the banking industry in the Louisiana market was considerably more concentrated than that in the Illinois market.[19]

Finance Company Data. Thirty-two managers of 44 offices of consumer finance companies serving the local markets in Louisiana and Illinois were personally interviewed, for a response rate of 73 percent. About 90 percent of the finance companies offices in the sample from the Illinois market were offices of chains; 90 percent of those companies responding to the survey were national or regional chains. Only 36 percent of the finance company managers interviewed in Louisiana managed offices of finance company chains.[20] On average, offices of the finance companies providing data in Louisiana had twice the dollar amount of loans outstanding as did the finance companies in Illinois.

Consumer Data. The consumer data were taken from personal interviews of consumers who had either a bank loan(s) but no finance company loan or a finance company(s) but no bank loan. The types of loans the subjects in the two groups could have were direct home improvement, durables, hobby and recreation or personal.[21] Auto loans were not included because most consumer finance companies did not make direct

auto loans in the two market areas and because of the effect of down-payments on loan risk.[22] The size of the consumer samples analyzed in the two markets is shown in Exhibit 1.

Rate Ceilings in Local Markets. The rate ceilings at the time of the survey for unsecured personal loans applicable to banks and finance companies in the two markets are shown below:

RATE CEILINGS (APR) 1979

	Illinois		Louisiana	
Terms of Loan	Bank	Finance Co.	Bank	Finance Co.
$500 - 12 months	12.68	28.80	36.00	36.00
$1000 - 12 months	12.68	25.67	35.45	35.45
$2000 - 24 months	12.91	18.57	32.19	32.19
$3000 - 36 months	12.83	20.24	29.56	29.56

The rate ceilings for banks in Illinois were low relative to those for finance companies. In contrast, banks and finance companies in Louisiana operated under the same high (by national standard) rate ceilings for unsecured personal loans.

III. The Analysis and Results

The consumer data set contained several indicators of the credit risk of borrowers. In the analysis, we tested for the significance of differences in the consumer risk measures of borrowers from banks and finance companies in these two local markets that differed primarily in terms of applicable consumer loan rate ceilings. We expected to find that bank borrowers in the high rate market were not significantly different from finance company customers in terms of risk characteristics.

EXHIBIT 1

RESPONDENTS WITH LOANS FROM A BANK

OR FINANCE COMPANY ONLY

	Illinois	Louisiana
Bank only	61 (72%)	61 (69%)
Finance Company only	24 (28%)	28 (31%)
	85 (100%)	89 (100%)

Source: 1979 CRC Creditors' Survey, Credit Research Center, Purdue University

The null hypothesis is that the distribution of credit risk characteristics of personal loan customers of the two types of lenders were the same. In contrast, in the market with different rate ceilings for banks and finance companies, we expected to find that bank customers were significantly less risky than finance company customers. The data from the creditors' survey contained two variables that were used to augment the consumer data revealing the extent to which banks and finance companies were in competition for the same set of loan customers: the manager's perception of competition between the two types of lenders and the most likely rates of charge on unsecured consumer loans.

Risk Indicators. To evaluate the risk characteristics of the borrowers we calculated a credit score for each consumer, using a credit scoring system adapted from that of a major commercial bank.[23] Several other variables that are generally regarded as being indicative of individual credit risk such as debt-to-income ratios and loan turndown experience were also analyzed.

The consumer samples were divided into high-risk and low-risk segments by the credit score (Exhibit 2).[24] A chi-square test of the distributions of credit scores for customers of banks and finance companies in Illinois revealed that the distributions were significantly different at the one percent level. In contrast, the null hypothesis that the credit scores of customers of banks and finance companies in the Louisiana market were drawn from the same distribution could not be rejected at the one percent level. These results support our hypothesis that in a market with a uniform and nonrestrictive rate ceiling, banks and finance companies will not segment the unsecured

EXHIBIT 2

PERCENTAGE DISTRIBUTION OF CREDIT SCORES

Illinois

	High Risk	Low Risk	Total
Bank	36.1%*	63.9%	100%
Finance Company	70.8	29.2	100%
			$\chi^2 = 7.04$**

Louisiana

	High Risk	Low Risk	Total
Bank	44.3%	55.7%	100%
Finance Company	64.3	35.7	100%
			$\chi^2 = 2.33$

*Thirty-six percent of bank customers in Illinois had credit scores such that they would have been classified as high-risk; 64 percent had credit scores that would have indicated low credit risk.

**Significant at the one percent level of confidence.

Source: 1979 CRC Creditors Survey, Credit Research Center, Purdue University.

loan market by credit risk. However, in both markets, more than 50 percent of finance company customers were in the high-risk category and more than 50 percent of bank customers were in the low-risk category.

From the consumer data we were also able to evaluate several other indicators of credit risk that a creditor could learn from loan applicants' credit reports. Specifically, a person who had been turned down for credit in the past might be considered a high credit risk by other potential lenders. Each individual was asked to indicate if he or she had been turned down for credit in the past few years (Exhibit 3). In Illinois, 54.2 percent of finance company customers reported that they had been rejected for credit, compared to only 18 percent of bank customers. A chi-square test indicated that there was a significant difference between the percentages of bank and finance company customers who had been turned down by other creditors. In contrast, in Louisiana there was not a significant difference in the percentage of bank and finance company customers (18 percent vs. 21.4 percent) that had been turned down for credit in the past.

Finally, the relationship between an individual's monthly instalment debt payments to monthly income may be used as an indicator of a person's ability to repay a loan. We calculated monthly debt payments relative to pre-tax monthly family income for the consumers in our sample. Debt payments excluded mortgage debt, credit card debt, business and "other" debt greater than $15,000. The mean ratios for bank and finance company customers in the two markets are shown below:

EXHIBIT 3

CUSTOMERS PREVIOUSLY REJECTED FOR CREDIT

	Illinois		Louisiana	
	Percentage	(N)	Percentage	(N)
Bank	18.0%	61	18.0%	61
Finance Company	54.2	24	21.4	28
	$\chi^2 = 9.39$*		$\chi^2 = .01$	

Responses to the query: Have you been turned down for credit in the last couple of years?

*Significant at the ten percent level of confidence.

Source: 1979 CRC Creditors Survey, Credit Research Center, Purdue University

Mean Monthly Debt Payments/Pretax Monthly Income

	Illinois	Louisiana
Bank customers	6.94	7.82
Finance company customers	12.06*	7.90

*Significant at ten percent level of confidence (one-tailed test).

A one-tailed difference in means test revealed that in Illinois the mean debt/income ratio for bank customers was significantly lower than the mean ratio for finance company customers. The ratio means were not significantly different in Louisiana. This result is consistent with those from the analyses of other risk characteristics of personal loan customers of banks and finance companies in the two markets. In Illinois, where banks and finance companies operated under different consumer loan rate ceilings, the personal consumer loan customers of the two lenders had significantly different risk characteristics. In Louisiana where banks and finance companies operated under a very high rate ceiling which applied equally to both lenders, the hypothesis that the distributions of risk characteristics of personal loan customers of the two types of lenders were the same could not be rejected at the ten percent level.

Perceived Competition. In the creditors' survey, both finance company and bank managers were asked to indicate their major competitors for direct consumer loans. In the Illinois market, 43 percent of bank managers viewed finance companies as major competitors; only 30 percent of finance company managers viewed banks as major competitors (Exhibit 4). By contrast, in Louisiana 60 and 73 percent of bank and finance company managers respectively viewed each other as major sources of

EXHIBIT 4

PERCEIVED COMPETITION BETWEEN BANKS AND

FINANCE COMPANIES FOR DIRECT CONSUMER LOANS

	Illinois	Louisiana
Bank managers view finance companies as major competitors		
Yes	43%*	60%
No	57	40
	100%	100%
Finance company managers view banks as major competitors		
Yes	30%	73%
No	70	27
	100%	100%

Responses to the query: What lenders do you consider as major competitors for direct consumer loans?

*Forty-three percent of bank managers in Illinois viewed finance companies as a major source of competition; 57 percent of bank managers did not view finance companies as a major source of competition.

Source: 1979 CRC Creditors Survey, Credit Research Center, Purdue University.

competition. The major reasons given by bank managers for their perception of finance company competition in Louisiana was service provided by finance companies. Finance companies' managers in Louisiana indicated that their major reasons for perceiving banks as competitors were that banks provided loans at lower rates than finance companies and that banks provided comparable services. These data are consistent with earlier evidence that in markets with nonrestrictive rate ceilings commercial banks and finance companies actively competed for the same consumer loan customers.

Rates (APR) of Charge. Finally, the most likely rates of charge for unsecured consumer loans from banks and finance companies would indicate the extent to which the two lenders compete for the same customers. In an efficient market financial assets will be priced such that the expected risk-adjusted rate of return on all assets will be the same. Thus, holding everything else constant, the extent to which the risk of two securities differed may be revealed by the differences in the expected gross yield (APR) of the two securities.

In the creditors' survey, we asked the credit managers of banks and finance companies to specify the most likely rate (APR) that would be charged at the time of the study on three types of unsecured personal loans.[25] The mean responses provided are shown in Exhibit 5. Examination of the most likely quoted rates and the ceiling rates for banks and finance companies operating in Illinois reveals that both types of lenders were charging approximately the ceiling rates for all three types of loans. And, the most likely finance company customer was more risky than the most likely bank customer.

EXHIBIT 5

MEAN "MOST LIKELY" RATES ON PERSONAL LOANS (APR)

	Illinois		Louisiana	
	Bank	Finance Company	Bank	Finance Company
12-month unsecured personal loan for $1000	11.6	25	12.5	33
N =	(7)	(9)	(5)	(16)
24-month unsecured personal loan for $2000	13.6	19.0	15.3	29.0
N =	(7)	(9)	(5)	(15)
24-month secured loan for $2000	13.3	19.1	15.8	33.0
N =	(6)	(9)	(5)	(18)

Responses to question "What is the 'most likely' rate you would charge on the following types of loans?"

Source: 1979 CRC Creditors Survey, Credit Research Center, Purdue University

In Louisiana, the mean finance company rates were about 300 basis points below the ceiling. Mean bank loan rates were considerably below the ceiling. The mean difference between finance company and bank rates in Louisiana was 1710 basis points. Although banks and finance companies in Louisiana operated under the same rate ceiling, the "most likely" personal loan customer of finance companies was more risky than the "most likely" loan customer of banks. These data are thus consistent with the results of the analysis of consumer credit scores in Louisiana. The difference between the modal rates on bank and finance company loans in that market reflects the differences revealed in Exhibit 2 between the most likely customers of banks and finance companies in Louisiana. However, these are only modal rates, and the analysis of the risk characteristics of borrowers in Louisiana has shown that the null hypothesis that these borrowers were drawn from different populations with different risk characteristics cannot be rejected. Thus, a mere difference in rates typically charged by banks and finance companies is not sufficient evidence that these lenders were not competing for the same customers in a state where rate ceilings were nonrestrictive and applicable to both types of lenders.

IV. Summary and Conclusions

Although there have been several empirical studies that concluded that banks and finance companies do compete for the same consumer customers, data problems and misspecification of markets limited the strength of the evidence. In this study we analyzed competition for direct unsecured consumer loans at the local market level under different regulatory regimes. Our results support the hypothesis that consumer

loan markets will not be segmented by risk when lenders operate under equal and unrestrictive consumer loan rate ceilings. However, in markets where there are different and restrictive rate ceilings for banks and finance companies, the consumer loan market will be segmented by risk.

These results are of considerable importance in the evaluation of the anti-competitive effects of mergers of financial institutions. Most states have laws that permit banks and finance companies to make consumer loans at rates exceeding the rates provided by state usury statutes. Where the rate ceilings are significantly higher for finance companies than for commercial banks, the legislature has, in effect, artificially segmented the consumer loan market. In these states the results of this study suggest that the merger of a bank and a finance company is not anti-competitive, since they are serving different risk segments of the market. However, the merger of two finance companies could reduce competition for high-risk consumer loans in those local markets where they both have offices.

In contrast, in states with high, unrestrictive rate ceilings that are about the same (or equal) for banks and finance companies, the merger of a bank and a finance company or two finance companies serving the same local markets could result in a reduction in competiton. Whether or not the merger would be anti-competitive would depend upon the resulting market share of the merged firm, as well as upon the market shares held by the leading firms operating in each local market.

An additional public policy implication of this study has to do with the issue of setting rate ceilings. Recently, both state and federal legislatures have been asked to consider revisions to laws governing maximum rates of charge for consumer loans. Given that competition in consumer loan markets is desirable, the results of this study show that restrictive rate ceilings that vary by type of lender promote risk segmentation and inhibit competition. Therefore, as rate ceilings are raised, one would also hope to see the equalization of ceilings for all lenders.

FOOTNOTES

[1]In November 1980, banks held 47 percent of total outstanding consumer instalment credit and finance companies held 25 percent. [Federal Reserve Statistical Release, G.19.]

[2]Order dated January 30, 1974 Denying Acquisition of Dial Financial Corporation by The Chase Manahttan Corporation 39 Federal Register 4814 (1974); Order dated August 3, 1973 Denying Acquisition of Public Loan Company by Bankers Trust Corporation, 38 Federal Register 21822 (1973), 59 Federal Reserve Bulletin 694 (1973).

[3]"Today, banks and finance companies compete in supplying retail credit needs for consumers; this is present in various forms of consumer loans and credit card transactions. In the long run, with the merging electronic technology, banks and finance companies are likely to become competitors for consumer services on an even broader scale." Department of Justice letter reacquisition of GAC Finance by Bank America Corporation, June 26, 1973.

[4]United States vs. Household Finance Corporation, HFC American, Inc., and American Investment Company. Hereinafter cited as U.S. vs. HFB. U.S. District Court for the Northern District of Illinois, Eastern Division, No. 79 C 80.

[5]Ibid., Judgment Order, March 22, 1979.

[6]U.S. vs. HFB, U.S. Court of Appeals for the Seventh Circuit, No. 79-1313, Decision August 10, 1979.

[7]For example, in his order approving the acquisition of Local Finance Corporation by Fidelity Corporation of Pennsylvania (May 29, 1973) the Federal Reserve Board was concerned with the proximity of some of Local's consumer finance subsidiaries to the offices of Fidelity. It concluded, however; "Although there may be some overlap in the customers served by Local and Applicant's banking subsidiary, it does not appear that consummation of the proposed acquisition would have a significantly adverse effect on competition for consumer loans . . . in view of the small amount of outstandings held by Local's subsidiaries in these areas and the great number of consumer loan sources present in those markets."

[8]U.S. vs HFB. U.S. District Court for the Northern District Illinois, Eastern Division, Affidavit of Jon M. Joyce, January 8, 1979.

[9]Outside of about nine states that have adopted the Uniform Consumer Credit Code (UCCC), most states have rate ceilings that are different for finance companies and other lenders.

[10]Stigler [17] proposes product differentiation as a type of collusion which reduces the risk of price cutting in an oligopolistic market.

[11]This is the rationale for special exemptions of lenders of small loans from state usury ceilings.

[12]Benston ([3], p. 154) found that the cost of servicing finance company borrowers was high by bank standards. On average finance companies had $64-$72 per loan in operating costs compared to $24 per loan for banks. "Knowing customers individually, working with them when they miss payments, etc., is expensive, but no doubt cheaper than accepting losses or engaging in court action to collect past due accounts."

[13]Boczar ([5], p. 247) points out "The risk segmentation hypothesis had traditionally been applied to consumer finance companies. It has usually not been allleged that banks and sales finance companies, particularly the captive companies, engage in risk segmentation.

[14]The Federal Deregulation and Monetary Control Act enabled banks and thrift institutions to have interest bearing checking accounts called NOW accounts but the explicit rate paid on these accounts is still limited by law and decontrol will be gradual over a 6-year period. In addition, credit unions may offer share draft accounts and money market funds offer check-writing capability.

[15]See Galai and Masulis [8].

[16]The creditors' remedy restrictions in the two markets were also different. However, the restrictions were the same for each lender within a market and thus were not expected to affect the results of this study.

[17]A summary of the demographic characteristics of the populations in the two local markets are available from the author.

[18]Kidwell and Peterson [13] found that inter-bank competition for direct consumer loans was greater in unit banking states than in branching states.

[19]The Herfindahl index for banks in the Louisiana market was .376 compared to an index of .204 in the Illinois market.

[20]The cost of capital for a national finance company was lower than the cost for a local finance company which borrows primarily from banks [1980 NCFA Fact Book, p. 69]. Thus, the local finance company may not effectively compete for the bankable loan customer. The fact that the majority of firms providing data in the Louisiana market were local offices would increase the probability of rejecting the null hypothesis of no segmentation in that market.

[21]A borrower could have multiple loans but had to have loans from only banks or only finance companies. Fourteen respondents from the two markets had personal loans from both banks and finance companies and were excluded from the analysis. Consumers in either group could have had a credit card from either a bank or a finance company.

[22]See [14] for an empirical analysis of the relationship between borrower characteristics, expost probability of default and size of downpayment for auto loans.

[23]The variables included in the scoring system were years on job, employment status, industry of job, education, occupation, have checking and savings accounts, credit cards, number of dependents, total outstanding debt excluding mortgage and credit card debt.

[24]The raw credit scores ranged from 114 to 250. Those with scores less than 180 were classified as high risk; those with scores greater than or equal to 180 were classified as low-risk.

[25]One of these loan types was secured by household goods which are generally considered to have little value because of the thinness of the resale market for used household goods.

REFERENCES

1. Akerlof, George A., "The Market for 'Lemons': Quality Uncertainty and the Market Mechanism," Quarterly Journal of Economics, (August 1970), pp. 448-500.

2. Baltensperger, Ernst, "Credit Rationing: Issues and Questions," Journal of Money, Credit and Banking, Vol. 10, No. 2 (May 1978), pp. 170-183.

3. Benston, G., "The Costs to Consumer Finance Companies of Extending Consumer Credit," The National Commission on Consumer Finance, Technical Studies, Volume II, Washington, D.C., pp. 1-158.

4. Benston, George and Smith, C.W., "A Transaction Cost Approach to the Theory of Financial Intermediation," Journal of Finance, 31, (May 1976), pp. 215-232.

5. Boczar, Gregory E., "Competition Between Banks and Finance Companies: A Cross-Section Study of Personal Loan Debtors," Journal of Finance, Vol. XXXIII (Marhc 1978), pp. 245-256.

6. Campbell, T.S., and Kracaw, W.A., "Information Production, Market Signalling and the Theory of Financial Intermediation," Journal of Finance, 35 No. 4., (September 1980), pp. 863-881.

7. Eisenbeis, R.A., and Murphy, N.B., "Interest Rate Ceilings and Consumer Credit Rationing: A Multivariate Analysis of a Survey of Borrowers," Southern Economic Journal, Vol. 41 (July 1974), pp. 115-123.

8. Galai, Dan and Masulis, Ronald W., "The Option Pricing Model and the Risk Factor of Stock," Journal of Financial Economics, 3 (1976), pp. 53-81.

9. Greer, Douglas F., "Rate Ceilings and Loan Turndowns," Journal of Finance, Vol. XXX (December 1975), pp. 1376-1383.

10. Greer, Douglas F., "Rate Ceilings, Market Structure, and the Supply of Finance Company Personal Loans," Journal of Finance, Vol. XXIX, (December 1974), pp. 1362-1382.

11. Heggestad, Arnold A., "An Evaluation of Interinstitutional Competition for Consumer Financial Services," The Costs and Benefits of Public Regulation of Consumer Financial Services, Cambridge, Mass: Abt Associates, Inc., 1977.

12. Johnson, R.W. and Sullivan, A.C., "Restrictive Effects of Rate Ceilings on Choice: The Massachusetts Experience," Working Paper No. 35, Credit Research Center, Purdue University, 1980.

13. Peterson, R.L. and Kidwell, D.K., "Bank and Non-Bank Competition in Consumer Loan Markets," Journal of Retail Banking, Vol. 1, No. 3 (December 1979), pp. 15-22.

REFERENCES (continued)

14. Peterson, C.M. and Peterson, R.L., "Downpayments, Borrower Characteristics, and Defaults," Journal of Retail Banking, (March 1981).

15. 1980 NCFA Factbook, National Consumer Finance Association.

16. Smith, Paul F., "Pricing Policies on Consumer Loans at Commercial Banks," The Journal of Finance, 25 (May 1970), pp. 512-525.

17. Stigler, George J., "A Theory of Oligopoly," Journal of Political Economy, Vol. LXXII, No. 1, (February 1964), pp. 44-61.

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